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## STUDYING THE MAJOR SUBJECTS

## BOOKS BY C. C. CRAWFORD

1. THE TECHNIQUE OF STUDY. Houghton Mifflin Co., Boston, 1928. Cloth, 353 pages, \$2.00.

A text for how-to-study courses in high school and college, treating the general problems of study as contrasted with methods of studying particular subjects. This is a completely revised and rewritten edition of "*Methods of Study*," which was published by the author in 1926.

2. THE TECHNIQUE OF RESEARCH IN EDUCATION. Published by C. C. Crawford, University of Southern California, Los Angeles, 1928. Cloth, 320 pages, \$2.50.

A text for graduate courses in research and thesis writing, and a guide for those engaged in educational research. Gives detailed descriptions of the procedures for the principal types of research, and presents solutions of the most common problems involved in thesis writing.

3. MODERN METHODS IN TEACHING GEOGRAPHY. By C. C. Crawford and Lois P. McDonald. Houghton Mifflin Co., Boston, 1929. Cloth, 306 pages, \$1.90.

A text for use in teacher-training courses, dealing with the problems involved in adjusting geography instruction to the needs of childhood and of modern life.

4. STUDYING THE MAJOR SUBJECTS. Published by C. C. Crawford, University of Southern California, Los Angeles, 1930. Imitation leather, 384 pages, \$2.00.

A text for how-to-study courses in high school and college, telling how to solve the main study problems involved in eleven major subjects of the curriculum. A companion volume to "*The Technique of Study*."

5. LEARNING A NEW LANGUAGE. By C. C. Crawford and Edna M. Leitzell. Published by C. C. Crawford, University of Southern California, Los Angeles, 1930. Imitation leather, 242 pages, \$2.00.

A guide for students of ancient and modern languages in high school and college. Treats methods for making language study purposeful and effective.

6. STATISTICS FOR TEACHERS. By E. W. Tieg and C. C. Crawford. Houghton Mifflin Co., Boston, 1930. In press.

An elementary textbook in statistical methods. Aims at the development of statistical insight or understanding, and ability to compute the statistical measures most commonly employed in educational work.

# STUDYING THE MAJOR SUBJECTS

BY

CLAUDE C. CRAWFORD, PH.D.

*Professor of Education, University of Southern California*

WITH INTRODUCTION BY

LESTER B. ROGERS, PH.D.

*Dean of the School of Education, University of  
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TO  
DR. CHARLES HUBBARD JUDD  
UNDER WHOM I FIRST STUDIED  
THE PSYCHOLOGY OF THE  
MAJOR SUBJECTS

27096



# INTRODUCTION

BY

LESTER B. ROGERS, PH.D.

*Dean of the School of Education*

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Public education has advanced to the point where those responsible for the school program are giving much serious consideration to the learner and his needs, and to the methods by which these needs may be more effectively satisfied. The teaching materials are being selected and organized with reference to their contributions to the experience of the learner, rather than with reference to the traditional mastery of facts or possible preparatory values. This means that the learner must have more definite purposes in view in his study, must assume greater responsibility for what he studies, and must determine for himself his methods of study. This does not relieve the teacher of these responsibilities, but rather calls for a more thorough understanding of the factors involved in stimulating and directing the activities of the learner. In this transition, any suggestions that will be helpful to the learner in discovering worthwhile purposes, or in developing effective procedures in realizing these purposes, is timely.

Dr. Crawford's *Teaching the Major Subjects* is written from this point of view. It is not a manual to be slavishly followed. He offers to the learner a great variety of suggestions on determining what is worth doing and how to do it. These suggestions are not mutually exclusive. Sometimes the following of one may render inconsistent the following of another. Neither is it thought



that any one suggestion will have equal significance for all students.

The newer trends in education have resulted in courses being given in both high schools and colleges in orientation, how to study, and educational guidance. Numbers of books have already appeared which would be suitable for use in such courses. Many of these, however, have attempted to give the student ready-made formulas rather than to provide materials which will enable him to determine for himself what he wants to do and how to do it.

This book by Dr. Crawford is different from other books which have appeared in this field in that it includes in one volume suggestions on how to study the different subjects or major subdivisions of the curriculum. It incorporates not only the ideas of the writer, who is a specialist in this field, but also a gleanings of the best suggestions offered by graduate students who have had experience in teaching the various school subjects. It is particularly timely in that it will enable both teacher and student to respond to the trends in the general social and educational thought. It makes it possible for the teacher to place upon the student, and for the student to accept, a larger responsibility for his own program and achievement. This is in harmony with the "activity program" movement which is receiving so much attention at this time.

Dr. Crawford is to be congratulated upon his work. In a way, it is a pioneer effort. It is also a challenge to him and to others to give further study to these problems.

## PREFACE

In preparing *The Technique of Study* which was published by the Houghton Mifflin Company in 1928, it seemed wise not to include a series of chapters on how to study the various subjects because there was more material on the general problems of study than space would permit, and because doing justice to the study procedures for particular subjects would require a complete volume. The present book is therefore a continuation of the task that was begun three years ago.

This book is intended as a text for definite courses in how to study\* for students in senior high schools and in the freshman year of college. Such courses should justify themselves in terms of better results in the other subjects, and they also should give a valuable training for life outside of school. The general offering of such courses in the high schools has awaited largely the provision of suitable textbooks. It is hoped that this book will help supply that need.

The fact that the volume has been written on the level of high school reading comprehension should make it more rather than less useful for the college freshman. The extensive use of *The Technique of Study* in both high schools and colleges is evidence that this new volume will be adapted to both levels.

The key word of the book has been HOW. An effort has been made to be practical, and to offer real help to real students in solving real difficulties. Not all good methods have been discovered, but the lists are by no means short, and their presentation in this form will

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\*For a discussion of the values of such courses, see: Crawford, C. C.: "The How-to-Study Course in the High School." *School Review*, Vol. XXXVIII, pp. 16-27, January, 1930.

serve as a nucleus around which to gather other and better methods in the future.

Progressive teachers need not wait for a definite course in how to study to be organized before they begin to put this material to use in their own classes. The English teacher can use much of the first two chapters, the foreign language teacher the third, and so on. The greatest value will be derived, however, from the use of the book as a text in a regular course in how to study, along with such a book as *The Technique of Study*, which deals with the general study problems, and with such books as are available on how to study the different subjects. One such specialized book entitled *Learning a New Language*, by Crawford and Leitzell, is published simultaneously with this volume.

The writer is indebted to many more persons than can be named here. Outstanding are the following: (1) Dr. Lester B. Rogers, Dean of the School of Education, University of Southern California, for his helpful advice and encouragement, and for his provision of a working situation favorable to research and writing on the part of faculty members in the school; (2) Dr. E. P. Cubberley, Dean of the School of Education, Stanford University, for his interest in previous books written by the author, and for helpful suggestions for the improvement of this one; (3) Mr. Ivan Benson, Assistant Professor of Journalism, University of Southern California, for his critical reading of the manuscript; (4) the scores of teachers and graduate students who have been enrolled in the writer's course in "Methods in Directed Study" and who have contributed so richly to the preparation of the book.

C. C. CRAWFORD.

University of Southern California  
Los Angeles

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# STUDYING THE MAJOR SUBJECTS



## CHAPTER I LITERATURE

*"Books are keys to Wisdom's treasure;  
Books are gates to lands of pleasure;  
Books are paths that upward lead;  
Books are friends. Come, let us read."*

EMILIE POULSSON.

The lover of books lives fully and richly. Literature not only gives a rich experience and affords a pleasant form of recreation, but it also gives inspiration, shapes ideals, and develops appreciation for the many types of people who live in the world. Like travel, literature provides opportunities for seeing the world, meeting strange people, and enjoying new experiences. This chapter presents several ways to make literature study yield its fullest values.

**1. How to judge the quality or merit of various works.** One of the first difficulties encountered in the study of literature is that of distinguishing what is good literature from what is bad. It is necessary to set up standards for judging the quality or value of the books available, since so much has been written that you cannot read it all. The following suggestions will help in sorting the good from the mediocre or poor.

*Apply the test of survival.* The works which were written years or centuries ago and have survived to the present are almost certain to be worth reading because they have the kind of message which appeals to human nature universally. This literature would not have survived if it had not offered real satisfaction and value to thousands of people. What has pleased thousands of others is very likely to please you.

*Get the verdict or estimate of persons who know.* You can learn the value of a work before you read it by consulting those who have already read it. Your teachers, classmates, or friends can give you valuable estimates of many literary works. Many books are reviewed in magazines and literary periodicals, or in books about literature. There is no need for proceeding blindly in the selection of books to read, because there are many good sources of information which can be consulted with little effort. Such periodicals as *Bookman*, and *Book Review Digest* make a specialty of imparting information about new publications; and the back numbers of these, of course, will tell about books published in previous years.

*Judge a book by the friends it has made.* If a book is highly recommended by someone whose tastes and standards are refined, the recommendation is naturally of more value than if it came from someone of little education, questionable character, or degenerate tastes. Books, like people, may be judged by the company in which they are found.

*Compare many books, and thus build up standards for judging literature.* After having read widely, you naturally form a standard for judging what you have read. You will then be able to rate one book as high, another as low, a third as mediocre, etc. Standards in literature,

as in other things, are relative; you can really know little about the worth of a book until you have read other books to 'provide a basis for comparison.

*Judge a book by its author.* Many new books almost automatically become "best sellers" as soon as they are published, because of the reputations of their authors. Similarly, books written in previous centuries, such as the plays of Shakespeare, are readily judged by comparison with others of the same author. If, during the time you are in school, you make the acquaintance of many different writers, you thereby open up a vast field for later reading. Each of these authors will have written many other books besides the one or two which you have read so that you will have enough good literature at your command to occupy you for a lifetime.

*Judge in the light of many factors rather than only one.* A book may be good in regard to style but questionable in its moral tone or its social teachings. It may be very interesting in plot but gushing and sentimental in its style of writing. It may have a good message poorly presented, or a trivial message presented skillfully and artistically. No single excellence should be permitted to exclude from your attention all the other elements that enter into the total merit of the book. One aim of a course in literature might well be the development of a many-sided standard for judging books, or the discovery of the many elements that should be considered in making judgments.

*Take time, after reading a book, to make a definite evaluation of it.* A short pause to take an inventory of a work after you finish it will deepen the impressions made upon you, and will help you to build up permanent standards which may be applied to new volumes. The final estimate may be compared with your impressions before

you read the book, and thus will serve as a check on the accuracy of your prediction. This practice will help you to make your judgment of later books more accurate.

*Do not expect your judgments always to agree with those of others.* People's tastes differ just as greatly as their physical appearance. What is good literature to one person is of little interest to another. A wide variety of works is available, so that persons of all sorts of tastes and temperaments may find something suited to their desires. While it is not the intention here to say that whatever you like is good literature, the point is that the effort to copy other people's tastes and standards to too great a degree may result in what might be called "literary hypocrisy."

*Assignments:* 1. Tell what factors are considered by the average reader in judging books.

2. Compare the values of two books with which you are acquainted, considering the points mentioned in this section.
3. Arrange the factors given in this section in the order of their importance.
4. Look up all reviews that have been published about some well-known book and decide whether the book is really good literature.

**2. How to get a suitable variety or range of experience through reading.** Just as the food which you eat daily may be perfectly good and wholesome and yet your diet as a whole be unevenly balanced and unsuited to your needs, so it is possible for your reading to include nothing but the very best literature and still your reading program as a whole be unsatisfactory. It is necessary to come into contact with all the varieties and types of good literature. Thus a program which included all prose and no poetry, or all poetry and no prose, would be questionable. In this section are a few sug-

gestions to help you to arrange for a "balanced ration" in your reading of literature.

*Include works of different literary types.* Read some prose and some poetry. Under the head of poetry include ballads, epics, sonnets, elegies, etc. Under the head of prose include not only fiction but also biography, travel, adventure, science, philosophy, drama, and fiction. One who has made acquaintance only with fiction and the short story will be surprised at the wealth of interesting reading matter of other types in any good library.

*Include the works of different authors.* A common tendency is to find an author whose works are enjoyed and to read his books to the exclusion of other authors. Thus, in the field of drama, Shakespeare's plays are very good, and yet this fact does not justify undertaking to read them all. To read all of any man's works, however good they may be, means neglecting other interesting and valuable literary contacts. One may spoil his appetite for a delightful dish by eating it too often, and it is possible to acquire a mental nausea as a result of too much reading of the books of a single author.

*Include a variety of different subjects or themes.* Do not concentrate solely on books that feature aviation, nor Indians, nor Greek or Norse mythology, nor medieval knights, nor wild animals, nor the sea, nor the frozen north, nor any other single theme or subject. Let each new book be as different in theme from the last one as it reasonably can be.

*Let different nations or countries be represented.* The material read should not only be chosen to portray events or situations in every country in the world, but in so far as possible it should include the writings of authors from different lands. These will necessarily be in English translation for all but a very few readers,

but the very greatest literature of other lands has been translated and may be obtained without great cost. Thus your reading program might well include such works as *Don Quixote* from Spain, *Faust* from Germany, *The Divine Comedy* from Italy, *The Arabian Nights* from the Mohammedan countries, and so on. When such writings are supplemented by books of English and American authors with settings in foreign countries you become a "citizen of the world."

*Read books of the past as well as those of the present.* You should make acquaintance with the great literature of previous centuries in addition to keeping in touch with the latest offerings of the publishers of the day. Books written in the Golden Age of Athens, as well as in the Industrial Age of America, should have their share of attention. The present cannot be understood and appreciated to the fullest extent except as it is contrasted with the past and related to it.

*Make use of available classified reading lists.* Suggestive lists of best books are published from time to time by various libraries, committees of English teachers, and other bodies, looking toward the solution of the problem which we are discussing here. Such lists are commonly classified under several heads, as fiction, biography, drama, etc., and serve somewhat as a "budget" for the regulation of your "literary expenditures." If you will use such a list and try to distribute your reading so as to include books from the different sections of the list, your reading will be much better balanced than when it is done according to mere whim or chance.

*Read sets or collections of literature consisting of many volumes and including various kinds and types of material.* President Eliot's famous "five foot shelf," the *Harvard Classics*, is an illustration of such a systematic selection

of a balanced program of reading. It has been suggested that if anyone would spend fifteen minutes a day reading this set of books he would in the course of time be a well-read individual. Other persons, such as Charles Dudley Warner, have collected what they consider the best of each type of literature, and put it into their particular sets of readings, anthologies, or selections from the classics, and the value of a particular set depends upon the ability and judgment of the collector. The policy of buying such sets of books as "The Complete Works of Dickens" or "George Eliot's Novels" is, however, just the opposite of what we are advocating in this paragraph, since it involves principle of uniformity rather than variety in reading.

*Maintain the exploratory attitude throughout your reading.* Just as, in traveling, you should plan your trips so that you will see strange cities and new regions, so, in reading, you should be always on the alert for new experiences. There is little opportunity to discover a new physical world, as Columbus did, but there are multitudes of new worlds to be discovered and explored through a well-balanced program of reading.

*Assignments:* 1. Make a list of all the books you can remember having read and decide what types of literature you have neglected or overemphasized.

2. From the above, check those that fall under the following heads: Biography, travel, adventure, science, essay, letters, short story, fiction, drama, poetry.
3. Bring to class any recommended lists of books which you can locate, and criticize these lists as to their range, variety, or balance..
4. Make a budget, plan, program, or schedule for your own reading for the coming year, and have it criticized by your teacher and classmates.

### **3. How to learn to like a better grade of literature.**

In times past it was common to assume that knowledge was accompanied by virtue, and that a well read person



would do what he knew was right. According to this theory, if you know what is good literature you will read that kind and pass by that which is not good. Unfortunately, people do not always do this. A struggle is often necessary before you bring your will or your interests up to the level of your literary judgment. The following are some suggestions for improving your tastes so that you will like books that are known to be of superior quality.

*Do not assume that interest and literary merit are opposed to each other.* Good literature is not all "dry" and dull. On the contrary, it usually has greater and more compelling interest than low-grade literature. Poor literature is usually poor because the author lacks the genius for literary expression and the ability to hold your interest. It is true that some of the "classics" and other books of high literary worth which have been recommended to you from time to time may have seemed dull and uninteresting to you, but their lack of interest was not caused by their high literary quality. They were probably intended for older or more advanced students than you, or were otherwise poorly selected for your needs. In the long run, good literature is more interesting than poor literature.

*Avoid attempting high-grade books that are for more mature readers.* To attempt a book of a mature and difficult type before your vocabulary and background of experience have developed to the point where you can really appreciate it may have a permanent ill effect upon your reading interests and cause you to dislike good literature. There is a great distinction to be made between quality and difficulty in literary selections. A book may be either easy or difficult to read, and either good or poor in quality. You should make your entry into

a higher level of literary quality by selecting first a book that is easy enough for you to read. Having come to like easy reading on the better quality level, you may later acquire the ability to read more difficult works on this same level.

*Expose yourself to good literature.* You learn to swim only by swimming, and you learn to like good literature only by coming into contact with good literature.

*Raise your standards gradually rather than by drastic steps.* You may as well face the facts and realize that human nature will stand only about so much strain before it will break. Consequently, it is well not to attempt too violent a reform or change in reading habits, lest you have a reaction and sink lower in your standards than you were at first. If each book you read is slightly better than the previous one, the improvement in the long run is great; and it is likely to be more permanent than if you go from the dime novel to something "classical" in one step.

*Select high-grade books in the light of the appeal they have made to other readers of your own age or level of school advancement.* Numbers of investigations have been made of the reading interests of children and of adults, with the result that we can know how much higher is the percentage of readers who like one book than who like another. If a book is known to be of good quality and to have been a favorite with those who have read it before you, the chances of your liking it are very good. Incidentally, most of the greatest works of literature were favorites and "best sellers" in their own day. Their genuine appeal to thousands of readers explains why they have survived and are on the market today.

*Take advantage of the contagious interest of others.* To a considerable degree you tend to like what your

friends and companions like. This is as true in literature as in other fields of human effort. Associate, therefore, with lovers of good books by enrolling in elective literature courses, or by joining book clubs and literary societies, and you will benefit by some of the interest and enthusiasm of people with high literary tastes.

*Assignments:* 1. Recall some past reading experience when you made a distinct step upward in your reading tastes, and explain what caused you to do so.

2. Select two or three books of outstanding quality which you can recommend to your classmates for their genuine interest and recreational value.

3. Make a list of the books you have liked best and submit it to your teacher or librarian for suggestions for similar books of increasing quality.

4. Tell where anyone can learn the titles of books that are known to combine high interest and high literary merit.

#### **4. How to develop the ability to spend longer periods of time in reading without fatigue or loss of interest.**

The cultivation of the reading habit involves, among other things, the development of ability to read for a long time at a sitting. Without this ability you are limited largely to such fragmentary reading as is involved in looking over the newspaper or reading short stories in magazines. Unless you are able to read for hours at a time, it is unlikely that you will get the maximum pleasure out of such books as Dickens' *David Copperfield*, since you will require so many weeks to finish the book, on the short-reading-period basis, that the continuity will be lost before you reach the end. Some suggestions which may help in the development of the ability to stay with a book for a longer period of time are given in the next few paragraphs.

*Arrange for reading time that is free from competition and distraction.* The reading habit is not likely to thrive in a weekly program crowded full of motion picture

shows, parties, picnics, and other interests. It has a much better chance to develop if there are numerous week-ends free from extra or unusual activities, with plenty of leisure for reading, and little else to call for your attention. By regulating your other activities you may give yourself a chance to become a book lover.

*Have your eyes examined.* If you do not enjoy reading for long periods the same books that other persons enjoy, you should have your eyes examined and, if necessary, fitted with glasses. A dislike for reading is not positive proof of bad eyes, but it is a very strong indication of it. Furthermore, people who have bad eyes are often thoroughly convinced that they have perfect vision.

*Arrange for physical comfort and relaxation.* Such a little thing as arm fatigue from holding up the weight of the book has considerable effect after an hour or more, and this fact suggests that the purchase of a special book holder or reading stand might be a good investment. The kind of chair used, the position of the light, the brightness of the light, and other physical factors, all have their share in bringing on or warding off fatigue. Oftentimes you think you are tired of reading when in fact you are simply tired of sitting or holding the book.

*Practice on easy material.* While you are acquiring the capacity for concentrated and prolonged reading, it is well to avoid the more difficult books which tax your mental powers. If the total burden is lightened by the elimination of comprehension difficulties, the progress is more rapid.

*Choose long-unit material.* You have less difficulty in spending an entire evening or week-end reading if you get a novel than if you get a collection of short stories.

The reason is that when you finish a chapter in the novel your interest is projected on into the next chapter and you cannot stop until you get to the end without leaving the story dangling. On the other hand, if you are reading short-unit material the first unit does not arouse an interest in the second one, and you have little desire to continue.

*Skip over uninteresting material.* There is no law requiring you to read every word of a book. It is not dishonest for you to skip a few pages of uninteresting matter if you have no taste for it. You may really do yourself a greater service by skipping what does not suit you than by patiently plodding through it and deadening your interest in literature.

*Read for a definite page or time goal.* The simple device of setting a goal at the beginning of a reading period is reported as being helpful by many students. Thus you may resolve to read until 4:30 P. M., or to read to page 200, or to the end of Chapter VIII, and in that way strengthen your will to keep going when you begin to get tired before reaching the goal.

*Increase your length of units gradually.* If you are able to read for an hour without difficulty, your next step might be to make it an hour and fifteen minutes. When this length of period has been mastered, a period a bit longer may be undertaken.

- Assignments:*
1. Think of the times during the week when you are free to read and decide what times are most favorable for long-continued reading.
  2. Write down a list of the specific factors that explain why your length of reading period is not as long as it should be.
  3. Debate the relative merits of reading for a page goal as contrasted with reading for a time goal.
  4. Arrange to keep a graph showing your progress in regard to the length of time you succeed in reading in one sitting. Use cross-ruled paper and along the bottom of the graph arrange the days,

1, 2, 3, and so on, and across the left side of the graph arrange the number of quarter-hours you have succeeded in reading at one period on each given day. Start your graph now and keep it posted up by drawing in your little additional lines after each reading period.

**5. How to gain personal inspiration, stimulation, or higher ideals through literature.** One of the benefits which is most often mentioned as coming from the reading of good literature is the raising of moral standards, the improvement of character, or the development of higher ideals, ambitions, and aspirations. It is not our intention to suggest the reading of books in a moralizing or sermonizing fashion; but since practically everyone has aspirations towards the better things of life, the suggestions given here may be of some assistance in increasing the amount of the personal inspiration and benefit to be derived from your reading.

*Select reading matter which has a worthy message.* The biggest factor of all, in getting the moral and personal values out of reading, is that of selection. Your literary companions should be chosen as carefully and discriminatingly as are your daily associates, companions, and personal chums. Books which are known to have a deep and powerful message should be preferred to those of a lighter, more frivolous, or questionable type. The best way to get inspiration from literature is to read the kind of literature that is capable of inspiring and stimulating.

*Put yourself in the place of your favorite character.* Pick out the person in the story whom you most admire and let yourself be that person for the time being, suffering his hardships and enjoying his good fortunes. Just as great crises have their effects on the characters of those who experience them, in actual life, so the crises which you pass through with your hero or heroine may leave



you humbler, wiser, stronger, and better able to face those crises which you meet.

*Give your instincts the chance to express themselves in sublimated rather than direct fashion.* There is a common viewpoint to the effect that "nature must have a chance to express itself." It is often misconstrued to mean that if you have a desire of any kind you should gratify it rather than suppress it. It is true that unwarranted suppression of native instincts sometimes results in various kinds of peculiar or abnormal traits. On the other hand, such cases do not warrant the policy of abandoning all restraint and gratifying every instinctive desire. The reading of a beautiful love story is a splendid way to give expression to the mating instincts; it is also decidedly preferable to the reading of some of the highly sensational types of literature of the day. In other words, it is better to read literature that gives expression to the instincts in their nobler, more refined, and idealistic forms. Literature offers many opportunities for this sublimated type of self-expression.

*Note and collect mottoes, quotations, and gems which express noble sentiments.* Almost every book has numbers of passages which set forth some moral principle or state some profound truth in unusually effective form. Such gems are worthless if memorized without a grasp of their significance; but if they are learned with understanding and appreciation they may be vital factors in directing your life and conduct. The search for such choice bits is a worth-while activity if you happen to enjoy it and do not carry it to extremes.

- Assignments:* 1. Tell what books you have read that gave you the most inspiration or did you the most good, and tell why.
2. List the outstanding characters in books you have read in the order of their merit as models or patterns which you would care to imi-



tate, and after each one mention the trait that you think is most praiseworthy in him.

3. Start a "worthwhile book". Each day write in it some quotation or thought derived from your reading. If you care to, illustrate with clippings, drawings, cartoons, etc.
4. Be prepared to make a short class talk on the value of mottoes and slogans.

**6. How to get into the spirit and atmosphere of what you read.** Experiences gained through reading are at best considerably less real and vivid than those actually gained in real life. There is always something lost or left out, as compared with the reality. One of the problems of the reader, therefore, is how to make the literary experience more vivid, natural, and lifelike. In other words, there is need for a great amount of "letting go," turning yourself loose," and "putting yourself into what you read." The following paragraphs mention a few ways of doing this.

*Be a participant in the action rather than a mere bystander.* There is greater enjoyment in witnessing an athletic contest when you are rooting for one team or the other than when you witness the struggle merely as a contest of skill. Some people deliberately select one team or the other, and even bet on it before the game begins, in order to have a personal interest in the outcome. In a similar fashion it is possible for you to join one or another of the contending forces as you read a novel or a work of history, and thus get a more vivid stimulation from the reading.

*Relax and let the author take complete charge of you.* If you feel like weeping, let the tears flow. If you are so excited that your heart begins to beat faster, congratulate yourself on your ability to get what the book has to offer you. In other words, let your emotions have their outlet instead of fighting against their normal and

wholesome functioning. The practice of resisting them as if it were sinful or weak to get wrought up over a "mere story" takes away not only a great deal of the value but also most of the enjoyment of what you read. As readers become more stoical, and build up more stubborn resistance, the authors of new books put forth greater effort to break down that resistance. There results a vicious circle, consisting of the reader's increasing his resistance and the author's increasing his efforts to overcome that resistance, until in the end we have a highly sensational type of literature. Or, as an individual reader, when you succeed in suppressing all emotional response to what you read from a given author, you lose interest in him and seek a more sensational type of writer in his place. The more wholesome and enjoyable policy, in the long run, is to relax, turn loose, and let the stream carry you, instead of fighting against it.

*Dramatize.* The simple device of reading aloud, particularly if you put a little expression into your reading, may go far toward making what you read seem more real and natural. To say the words of a character in a story in the way you think he would have said them is a good way to put yourself in his place and get the full force of the events in which he plays a part.

*Assignments:* 1. Select some action of your favorite character in a book and dramatize it as nearly as you can in the way you think that character would do it.

2. Try to recall where and when you first got the idea that to give away to an emotion while reading was a sign of weakness.
3. List all the different kinds of emotional expressions which at some time or another are suggested by your reading.
4. Arrange to be completely alone and read a piece of literature, deliberately turning yourself loose emotionally. Decide whether you like the idea, but do not feel obliged to discuss the experience in class.

## **7. How to keep up to date as regards acquaintance**

**with the best current literature.** Some people seem to have an almost uncanny "gift" for being able to discuss intelligently the very latest books, while others only discover a best seller, if they discover it at all, after it has already been published in its second or third edition. Keeping up with the race of events in the literary world is no small task, but it is very profitable, and very enjoyable, for those who have learned how to do it. The following are some valuable methods.

*Actually read a good number of the new books as they appear.* First-hand acquaintance with books is the best basis for keeping posted on current literary movements and trends.

*Subscribe to a magazine which boils down the current publications for you.* There is an increasing tendency for publishers to produce magazines which pick, choose, and condense the best that is written each week or month and make it available for busy readers. One of the best of these is the *Reader's Digest*. It contains brief articles which give the pith of the better magazine articles of the month, and thus it presents a great deal of material in a nutshell. Such magazines enable you to be fairly well informed about what is going on even though you have not enough time to read many books outright.

*Practice skimming and browsing.* Numbers of book lovers make a point of going through bookstores and libraries from time to time to pick up, look through, and sample the new books which time does not permit them to read. The mere fact that a book has been seen and handled makes more meaningful any later information about it that may come to you from reading book reviews, from engaging in conversation, or from other sources.

*Read book reviews.* The more important new books are

usually reviewed in the better literary journals, and these reviews are valuable in three ways. In the first place, they serve as a guide as to what to read, so that your selection of reading may be wiser. In the second place, they often serve as a substitute for reading books, supplying a certain amount of dependable information about them, and thus enabling you to be fairly well informed even though your reading time is scarce. In the third place, they provide some standards by which to check or compare your own estimate of books after you have read them.

*Watch the library's list of new books.* Most libraries have a practice of posting notices of the new books on the bulletin boards, or of placing new books on a special open shelf for a few weeks for general inspection by their readers. Some of the people who keep well posted on current publications make regular visits for the inspection of these new additions to the libraries.

*Join a book club.* The desire to keep informed about the new books is so widespread that numerous organizations have been formed which aim primarily to satisfy it. These book clubs are of many types, two of which are particularly common. One is the type in which you buy a book a week, or a book a month, selected by the experts at the head of the club, and which is supposed to be the outstanding book published during that period. Various provisions are made for adapting the books to the special tastes of the members receiving them. The other type is that which emphasizes more the monthly meetings of the local club members, at which there are lectures, reports, and discussions about the better books and about other topics of literary interest. Such organizations have obvious merits and possibilities.

- Assignments:** 1. Arrange the methods given in this section in the order of their worth or value to you and justify your ranking.
2. Prepare a list of the best-sellers for the last three months. Star those that have come out during the last month.
3. Give a report on the book reviews you have read this week.
4. What kind of a book club do you think your school needs and could operate successfully?

**8. How to study literature that is rich in historical or mythological references.** Some of the great classics of literature presuppose a thorough acquaintance with a background of history and mythology. Thus the poetry of John Milton sometimes has several historical or mythological characters named in a single line. Quite often, therefore, the meaning of a sentence is not clear unless you are acquainted with the persons or situations referred to. The following suggestions may be of service.

*Include history and mythology as a part of your reading program.* If you find that you cannot understand Milton because of your lack of historical background, read books of a historical character to build up that background. This need not be done in the spirit of work, since you will be able to get genuine pleasure out of your historical reading. Thus you might read a translation, or even an abridged edition, of Homer's *Iliad* and *Odyssey* and thus become familiar with one of the richest sources of mythology that runs through later writings. The reading of such great works as the *Aeneid*, *The Beowulf*, *Canterbury Tales*, *The Niebelungenlied*, *The Cid*, etc., will still further round out your experience and provide a basis for the intelligent reading of works which require a historical and mythological background.

*Use annotated editions.* Many of the better literary classics are now published in small volumes containing more or less elaborate notes explaining historical allu-

sions and filling the gap between the reader and the author.

*Use glossaries and reference books.* It is possible to buy special books of reference which can be consulted when you are in need of information to explain historical or mythological allusions. A good dictionary of mythology, or a good historical encyclopedia, will be a very useful source of information in time of need. The mere fact that the pronunciation of proper names is easily found should be a good reason for knowing that such works exist and where they can be obtained.

*Do not overdo the looking up of historical information while reading.* A person of too tender conscience, however, may kill his interest in a beautiful work of literature by carrying to extreme the practice of tracing each historical allusion to its source and getting it fully explained. The side trips become so numerous and so long that the main journey lacks interest. You have to make a compromise between the main things and the by-products, and must have the courage to pass by some points that are not entirely clear, lest by looking them up you sacrifice something else of greater value. If the material is so rich in allusions that you cannot understand it without an excessive amount of use of reference materials, choose something else instead, and make an effort to remedy your lack of background by more direct contact with the historical facts to which allusions are most often made.

- Assignments:*
1. What countries, nations, or peoples are most often referred to in such English classics as you have read?
  2. What good book of mythology would you read to get some of the background of the Greeks? Arabs? Germans? Spanish? American Indians? Egyptians? Chinese?
  3. Where could you go to find out about some legendary character referred to in the classic which you are reading?



4. What is your estimate of the value of an annotated edition of a classic?

**9. How to make use of information about the history of an author or his work.** The approach to literature by way of the history of authors and works is a very common one. Almost every student at some time takes a course in the history of literature. In spite of the fact that these lessons do not always prove as profitable or enjoyable as might be desired, there is a genuine value in knowing the historical aspects of literature. Some suggestions bearing on this topic are given in the paragraphs which follow.

*Do not let historical studies become a substitute for actual contact with literature.* If you have read the life of John Bunyan but never read his *Pilgrim's Progress* you have mistaken the means for the end. If you spend so much of the time in a literature course studying the lives of the various authors that you do not come into contact with what they wrote, you have misplaced the emphasis. History should be an aid to the enjoyment of literature, but not a substitute for it.

*Do not force yourself to learn and remember historical facts if they do not have any particular significance or application.* The early childhood of one writer may have had a very pronounced bearing upon everything he wrote, while that of another seems to have little connection with his works. Clearly there is greater need for knowing about the childhood of the first writer than of the second. Unless history contributes something, there is little reason for looking it up.

*Begin by studying the work before the history of it.* If, as you read a book, you have a desire to know something about its author or its historical setting, immediately look up the history of that author or work. His-



tory thus studied will be learned in response to a real need rather than in an aimless and formal way. This plan would eliminate a considerable part of the study of the history of literature because the desire or urge to look it up would probably not be felt; but the loss would be of no great consequence, since much of the material commonly included in courses in the history of literature has little direct relation to literary appreciation anyway. Probably one of the greatest mistakes that has been made in the study of literature in the schools has been the overemphasis on the learning of historical facts.

*Assignments:* 1. Do you think it is better to read a piece first and look up its history later, or to read the history first and then the piece itself? Why?

2. Give examples from your experience in which knowledge about the author or the work helped you to enjoy the work.
3. In what specific ways does historical knowledge contribute to your enjoyment of the literature?
4. What do you find to be the best way to acquire necessary historical information about literature?

**10. How to study the style, structure, or technical aspects of a piece of literature.** Considerable time and effort is given in some literature classes to the study of technical phases of literature, involving the analysis of the author's methods of expressing himself, the peculiarities of his style, and the structure of his writings. The following suggestions have some bearing upon this type of literature study and may be of value in connection with it.

*Avoid carrying this type of study to extremes.* As a general proposition it is more valuable to study literature for its effect rather than for the method by which it was written. In other words, you should study literature from the standpoint of the consumer rather than the producer of it. Just as you can enjoy the beauty of

a fine building without understanding all the technical problems involved in its architecture, so you can enjoy a work of literary art even though you are not conscious of its structure and technical elements.

*Study the work to note points mentioned by the critics.* Just as you are more likely to discover the points of architectural distinction in a beautiful building under the guidance of a trained architect, so you are more likely to discover the fine points of literary style in a work if you note what the expert literary critics have had to say about it. Your study of the style of an author should begin rather than end with the reading of the report of the critics, however, because if you once know what to look for you are more likely to find it, and if you simply read the reviews you have only learned what to find and have then quit the search.

*Read books on literary technique and literary criticism.* This will help you to analyze a particular work. Most people need to be taught how to look at a great painting, or how to judge an oratorical contest, or how to referee a game of football or basketball. The same is true in judging the work of a literary artist. You must know from your study of rhetoric and literary criticism what are acceptable standards in the various technical phases of an author's work in order to judge his style and technique accurately.

*Do some literary writing yourself.* If you have once tried to write a little poetry, or if you have indulged in the pastime of composing a one-act play, you are in a considerably better position than before to judge the technical skill and literary genius of poets and dramatists. This is not the only method of gaining the desired end, and is by no means essential to literary appreciation, but

it does have considerable value and is a pleasant pastime for many students.

*Compare several authors and works in regard to particular technical points.* After you have read several plays, several poems, or several novels you begin to establish norms or standards and to note that different works of literature depart from these standards in different ways. This is really one of the very best ways to appreciate differences between authors. This is another way of saying that judgments concerning the technical aspects of literature are usually relative rather than absolute.

*Assignments:* 1. Name as many different concrete aspects of style as you can which you can actually judge or observe in a piece of literature.

2. Take some familiar piece of literature and examine it critically with respect to the points you have just listed.
3. Compare the work of two different authors on as many points of style as you can, specifying which author is superior on each point.
4. Select a piece of literature that has an outstanding style and write a few paragraphs in imitation of that style.

**11. How to make an intensive and thorough study of a great work of literature.** It has been said that some books are to be tasted while others are to be chewed and digested. It is the latter type which is the subject of the present section of our chapter. Inasmuch as some works are judged to be worthy of more than passing study, there should be some advantage in having a number of different methods in mind which may be employed in making an intensive analysis. The following are some methods which have been proposed by successful students of literature.

*Read the work as a whole before going into it intensively.* The first step in making a thorough study should be to see it in perspective. One reading, in much the same fashion as if you were simply reading the work only

once and purely for pleasure, should ordinarily give this perspective, and it should make more valuable the later intensive work which you do.

*Read the work several times.* Many book-lovers report that they read some books over and over, and each time get more enjoyment in the reading. While this may not be true of every type of literature, it undoubtedly has its applications in the case of numbers of works, and should be given due consideration.

*Read slowly so that you can analyze as you read.* The policy of slow reading in connection with an unusual piece of material may be compared to the policy of leisurely driving when you are traveling through a new portion of the country. The amount you see or the amount you get from the reading may be to a large extent proportional to the time rather than to the amount of distance covered. This policy does not apply to all reading, but it does apply to many specific works.

*Stop and dwell on choice passages.* It is often well to select a few representative portions of a work for more than ordinary attention and to master these so thoroughly that they come to be permanent representatives of the work as a whole. This may even involve memorizing the parts selected so that they will be your permanent possessions.

*Get the historical background of the work.* If you have time and inclination for a really thorough study of a work it is often profitable to look up information about the author, the period in which he lived, or the period in which the story has its setting. Furthermore, there is some value to be derived from learning about the editions through which the work has passed, or the reception it has had in various countries or in various periods of time.

*Look up allusions.* In an intensive study you will ordinarily devote much time to consulting notes or reference works regarding historical or mythological references and to the hunting up of the meanings of unfamiliar or peculiar words.

*Make a synopsis or outline of the work.* If you make a written record of the high points in the plot or story, reducing these to their bare skeleton, you may discover a great deal more in the selection than you would otherwise. In reading a play, for example, you may locate such significant elements as the rising action, climax, declining action, and catastrophe. If a piece deals with events in a time series you may get some benefit from making a chronological record and locating events in the order of happening with relation to each other. One fairly good device is to write a synopsis of the first portion of a work in such a way that if another person were to begin the piece at the point where your synopsis leaves off he could follow the thought in the remainder of the book with interest and understanding.

*Record your personal reaction or criticism of what you read.* You may prepare a report or review, giving the reasons why you like the book, why you think it should be purchased for the school library, or why your friends should purchase and read it. This may include telling the high points in the plot, quoting particular passages, selecting interesting and unusual expressions, or suggesting parts that seem to be worth memorizing. Your criticism may include comparisons with works of other authors or with other works which have been produced by the same man.

*Read criticisms of others.* One good way to make a more thorough and intensive study of a given work is to read a great deal that has been written about it by the ex-

perts. This should come after you have already read the book itself and should preferably be followed by a rereading of the work, in which you make a special effort to note the points brought out by those whose criticisms you have read.

*Use a printed study outline as a guide.* For some of the more commonly studied literary classics, special study guides are available for intensive and thorough work. These study guides include questions which direct the attention to essential features, or which stimulate you to dwell upon particularly important points, or even to stop and meditate upon the soundness or unsoundness of the author's philosophy. They may even include specially prepared objective tests by which you are able to measure your mastery of what you have read. In following such an outline you may have to pick and choose and pass by some of the items which are included, because as a general rule these outlines are prepared with the idea of including enough items to satisfy all exacting students, and they may represent somewhat more burden of detail and minute analysis than is required for your particular need or purpose.

*Do not read all literature intensively.* Not every work of literature deserves such intensive study as has been described in the previous paragraphs, nor do many of them deserve to be studied by all the methods mentioned here. The point is simply that, if you have some real reason for going into detail upon a piece, you may get help from the suggestive list of procedures given here or may think of other methods similar to those—not that you should make such methods your regular and usual procedure.

*Assignments:* 1. Do you think it best to spend the same amount of time in reading one book thoroughly, or in reading three? Why?



2. What types of authors or works do you think should be studied intensively?
3. List all intensive methods which you have used in studying literature in the past, and tell which were and which were not good.
4. Examine any available study outlines or study plans for literary classics and evaluate the procedures suggested in them.

**12. How to study dramatic literature.** Inasmuch as the drama is written to be staged, the methods of reading or studying it necessarily differ in some particulars from those suitable for other types of literature. The following methods have been offered by persons who have learned how to be interested in this form of literature.

*Read first without acting, and for the general spirit of the play.* There is much enjoyment to be gained simply from reading a play as a story, to see the action unfold. In many cases the study should stop with this general reading; in other cases this first reading will simply be the beginning, or the preparation for more intensive and more active methods of study.

*Get pictures of actors and scenes to aid your imagination.* If you happen to be reading *Hamlet* or *King Lear*, you will be much better able to reconstruct the leading characters if you have access to pictures of great Shakespearean actors who have played these parts. Likewise, you may be able to find photographs of typical stage scenes in which several characters are involved, and thus be better able to clarify your reading of the play with an appropriate type of mental imagery.

*See good plays.* Attend both legitimate stage and motion picture productions. The legitimate stage play will be preferable in one way, in that it will cause you to associate the action more with the stage, and thus constitute principally a study in dramatics. The motion picture version, on the other hand, will take you out of the



stage situation and its narrow limitations, and will constitute a representation of life itself, since the action can be photographed in various places and without the limitations of the walls and footlights of the stage.

*Imagine the characters as being located on a stage rather than in real life situations.* If you are studying the art and technique of dramatics through a play, the advice just given is sound. Such a policy centers your attention on the staging of the play. If, on the other hand, you are merely reading a play as literature, and are not interested in dramatic technique, this advice would be questionable, and you might do better to think of the action as taking place in real life rather than on the stage.

*Read the play aloud.* Oral reading is more in keeping with the spirit of a play than is silent reading because the action moves forward principally through dialogue, or the speech of the characters. When you read it aloud, therefore, you are that much nearer to the goal of really acting the parts which you read.

*Read aloud with a partner to take the alternate parts.* Two students can do a great deal to help each other enjoy a play if they will study it together. Each may take a part, and try to read a given character's words as he would have spoken them. As new characters come and go, each student will represent different parts, but there is still the ever-present reminder that there is real action and real dialogue to a greater extent than when one person reads alone.

*Act the part as you read it.* If, in addition to reading aloud, you also put the expression into the words and accompany them by their appropriate bodily actions, you get more completely into the spirit and feeling of the play. By doing so you live more completely the ex-

periences that are the basis of the play, and get more of what it has to give you.

*Carry out the action in pantomime.* The words sometimes interfere with the action as you try to read and act a part. A good way to center attention on the action more completely is to leave off the words and practice carrying out the action in pantomime, continuing until you can make the idea clear to an onlooker without having to use words as a crutch to support the meaning of your actions.

*Assignments:* 1. List the plays that you have read and tell why you liked them or failed to like them.

2. When is it justifiable to read a play as you would a novel?
3. List and describe ineffective methods which you have known students to employ in reading or studying plays.
4. Contrast the methods that would be best for studying a play if you were: (a) reading it at home for pleasure; (b) studying it in a literature class at school; (c) getting ready to stage the play in a dramatic club; (d) learning it as an actor on the professional stage.

### **13. How to enjoy the beauty and music of poetry.**

Poetry has its own distinguishing features, as compared with prose, particularly in regard to the elements of rhythm and rhyme, or its metrical form. The practices suggested in this section may be valuable in helping you to get the full measure of results from your reading of this type of literature.

*Select poems of a type which you can read without difficulty.* Some poetry is of such a complex pattern, in both rhythm and rhyme, that you have difficulty in discovering which line rhymes with which, or in discovering how to read it so that it "sounds like poetry." Blank verse, for example, is usually more difficult to read so as to bring out the rhythm than is the rhyming couplet. If you have difficulty in reading and enjoying poetry, start

with the simpler types and gradually work up to the more difficult poetic forms.

*Read poems aloud.* The rhyme and rhythm become much more apparent, and often much more satisfying, if the poetry is rendered orally. The sound images of previous lines linger more vividly in the mind and thus "match" the sounds of the later lines more perfectly. Reading poetry silently resembles, in a way, dancing without an orchestra.

*Exaggerate the rhythm as you read.* The same principle that is involved in tapping your foot on the floor while listening to music is involved in over-stressing the rhythm as you read poetry. It is a very effective way of "getting into the swing" of the piece. It will eventually make itself unnecessary, however, since you will soon be able to follow the rhythm effectively with normal stress after you have once found it by means of the exaggerated emphasis.

*Read the same poem over and over.* Repetition adds more to the enjoyment of poetry than of any other type of literature. It is the secret of the popularity of the song hits of the day. A poem or song that seems to be mediocre on first repetition becomes the object of the keenest enjoyment after a few repetitions. One reason is that you know what to expect, after a few repetitions, and thus have the satisfaction of having your expectations fulfilled. Also, you become more skillful in your rendering of a poem after you have had a chance to practice it several times, and can bring out the music in it more perfectly.

*Memorize choice stanzas.* The principle of repetition, just mentioned, reaches its highest development when you repeat a poem to the point of verbatim memory of it. The joy of being able to recite a beautiful poem

from memory can be appreciated only by those who have tried it.

*Listen to poetry as it is read by others.* A skillful rendition of a poem by someone who really enjoys it and knows how to bring out its potentialities is most pleasing and valuable. In fact, this form of entertainment is almost as old as civilization, dating back to the days of the wandering bards who chanted the stories of the great national heroes at the courts of the kings and the nobility.

*Write some poetry yourself.* Some one has said that there are few persons who have achieved fame and greatness who did not at some time aspire to write poetry. Writing poetry seems to be as natural and normal as building air castles or gazing at beautiful sunsets. It is not a highly technical art, except for those who deliberately make it so. If you have an inclination to write a poem about a flower, your mother, the moon, or any other subject, congratulate yourself on being kin to the greatest souls of all time—and don't hesitate to write the poem even if your technique may be a bit poor.

**Assignments:** 1. Select an unfamiliar poem and read it over several times. Note whether it seems to increase in beauty with the readings.

2. Select two poems of similar nature and read one silently and the other aloud. Which do you like the best?
3. Beat time with your hand as you read a poem and see whether it helps or hinders your enjoyment. Explain why.
4. Write a short poem of your own in imitation of the meter and rhyme of some great poem and compare with the original poem. Did your literary efforts help you?

**14. How to overcome the comprehension difficulties involved in the poetic type of literature.** Not infrequently a poem is read with due regard for its rhythm

and rhyme, but with no more realization of its meaning than if it had been written in an unknown tongue. Furthermore, the necessity of fitting the thought into rhythmic patterns, and of ending the lines so they will rhyme, often causes the poet to use unusual words and inverted sentence structures, thus creating genuine comprehension difficulties, even for persons who really try to get the thought. The following paragraphs offer a few hints on how to get the meaning out of difficult poetry.

*Read enough poetry to become accustomed to the poetic style of expression.* Just as a student of a foreign language learns through practice to interpret the meanings of sentences in which the word order is quite different from that of English, so the student of poetry soon acquires a greatly improved capacity for getting the thought of poems in which the poet has taken liberties with the order of the English language.

*Read whole pieces rather than excerpts.* Some poetic gems lose most of their meaning when removed from their context. Thus the beautiful song from Brownings' *Pippa Passes* cannot be fully appreciated unless you know that Pippa was a little factory worker enjoying a very rare holiday, and that her optimistic viewpoint is sharply at variance with the sordidness and degradation of the world in which she lives. Similarly, the "Full many a gem" stanza from Gray's *Elegy* depends for its meaning upon the country churchyard setting of the poem as a whole.

*Read silently, as prose.* One of the difficulties in getting the thought of poetry is that the rhythm and music take so great a share of the attention that the meaning is ignored. The obvious remedy is to read silently, deliberately refraining from falling into the metrical cadence.

One or two readings of this type will supply the desired understanding, after which the poem may later be read rhythmically and for the musical elements.

*Rearrange the sentences in conventional order.* In some cases it may be advantageous to examine a sentence critically, find the subject and verb, and rearrange it in a prosaic or conventional order as a means of discovering what it really means.

*Paraphrase.* The device of reading the entire stanza or poem through and then summarizing it in a few brief sentences which give its substance all in a limited space may be justified as an occasional procedure in connection with poems in which the comprehension problem is serious.

*Avoid carrying such formal and intellectual methods of studying poetry to extremes.* The procedures which have just been mentioned would completely take the joy out of poetry if they were employed regularly and slavishly in connection with all poems read. They have been suggested as emergency measures, and for occasional use only. Even when they are used, they should be preceded, accompanied, or followed by procedures which emphasize more of the elements of beauty and charm which are characteristic of poetry.

*Assignments:* 1. Compare the value of reading poetry for the thought and for the music.

2. Think of some poem whose meaning was difficult for you to get and explain the reason for the difficulty.
3. Which of the methods mentioned in this section do you consider most helpful? Why?
4. Paraphrase some poem and when you are through decide what was the gain and what the loss on account of the method.

**15. How to increase literary appreciation and enjoyment through the memorizing of choice selections.** Just as some people get keen enjoyment from the collection

of rare vases, antique furniture, fine jewels, or stock certificates, so many lovers of literature get keen enjoyment from the accumulation of choice fragments, unusual literary gems, striking quotations, wise sayings, mottoes, and the like. For this reason we give a few devices which have been reported by students of literature regarding this avenue to literary appreciation.

*Select your passages with care and discrimination.* No practice in the reading of books represents quite such poor taste as that of indiscriminately marking the book or the copying of sentences into a notebook when they are of little or no special significance. The parts that are selected for special emphasis should really be worthy of that emphasis. A first essential, therefore, is to learn to be discriminating in your judgment of relative values, and to take only what is the very best.

*Memorize the passages that are most often quoted by writers and speakers.* To hear a lecturer quote a line or two which you know from memory gives you very much the same pleasant reaction as you have when you see a familiar face in the crowd in a strange city. If you memorize many of the often-quoted passages from literature, you multiply your chances for having this satisfaction. You also equip yourself with a good store of gems which are suitable for use in your own speaking and writing.

*Memorize many short fragments rather than a few long poems.* Even the greatest poets can rarely maintain for very long the exalted pace that they manifest in occasional choice stanzas or lines. If you memorize long poems, therefore, you take much that is of less than the top grade. Furthermore, there are not nearly as many opportunities in daily life for you to quote a page of poetry as there are for you to quote a line or two.



*Strive for variety of types and subjects in what you collect.* It is well to avoid falling into a single groove and limiting your collection of memory gems to a restricted type. It is well to collect fragments of prose as well as poetry, and passages which are notable for their expression of great truths as well as those which are distinguished for their beauty. If your treasure is widely varied it will be adapted to a larger number of situations and occasions, and will give you greater enjoyment and service.

*Be sure to get the meaning of what you memorize.* The greatest advantage that comes from your having a collection of memory gems is derived from your being able to repeat a choice line or stanza at the "psychological moment" to emphasize a point or to support a previous statement. This advantage is almost totally lost if you do not know the meaning of what you have memorized. Speakers occasionally make themselves ridiculous before their audiences, moreover, by quoting passages in connections where they are inappropriate, thus showing that they have not fully grasped their deeper meanings. Before taking a fragment out of the total work of literature be sure that you have first made acquaintance with it as an integral part of the whole, and that you can carry with it the broader meaning which it had while in its original setting.

- Assignments:*
1. What types of material are best to collect and to memorize?
  2. In what specific situations are quotations and memory gems most useful?
  3. Start your own collection or memory book of favorite quotations and gems.
  4. Prepare for a class "quotation bee" or a "gem down." Divide into two groups and see which group can offer the largest number of quotations and memory gems.

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## CHAPTER II

### COMPOSITION

*"The pen is mightier than the sword."*

BENJAMIN FRANKLIN.

*"Give me the right word and the right accent  
and I will move the world."*

JOSEPH CONRAD.

The one subject which every student is practically certain to study at some time is English composition. The fact that it is a required course for all students indicates that school systems rate its value very highly. This chapter will introduce some of the methods which contribute to success in the study of composition. Each main topic represents one of the principal difficulties involved in composition work. Under each difficulty are offered suggestions for overcoming it.

**1. How to select a subject for a composition.** One of the first difficulties that confronts you when you start to write a composition is the choice of a subject about which to write. The effectiveness with which you make this choice has a great deal to do with the success or value of your product. Such suggestions as are offered below may be of considerable value in improving the effectiveness of your selection.

*Select a subject in which you yourself are vitally interested.* If you are not interested in the subject, it is very likely that your readers will not be. The old rule that your heart must be in your work is just as true in composition as in any other kind of work.

*Select a subject about which you know a great deal.* Next to your interest in the subject is the requirement that you have something to say about it, or that you have had some experience related to it which is worth relating to others. If you caught a big fish at the lake last summer, a theme describing that experience probably would be more effective than one on the life habits of fresh water eels or on the peculiar habits and customs of the natives of Thibet. A composition has no justification for existence unless it is to convey ideas or experiences from the writer to others; and if there are no genuine experiences to convey, the whole effort of writing will be fruitless.

*If you must write a composition on a required subject, find out something about it.* Next to the possession of knowledge of your subject is the ability to find out something and thus add to your knowledge. It is entirely proper to write a theme on a subject about which you know little or nothing at the start, provided you are so situated that you can find out about it before you write, and provided you are willing to take the trouble to do this investigating.

*Select a subject in which the reader is likely to be interested.* Next to your own interest is the factor of your reader's interest, and it is often possible for you to judge beforehand what the reader will like. Certainly an adult reader will be interested in a different type of subject from that which will appeal to a small child, and boys are often interested in subjects not interesting to girls. You must always keep your audience in mind and be sure that what you say will appeal to them. Ordinarily this requires that the subject be one which is new or unfamiliar to your readers, because they are not likely

to be interested in the recital of facts or experiences which are already well known or commonplace.

*Write down a long list of possible subjects as an aid to choosing the best one.* This is a common device employed by students in making their selections, and one which has very high possibilities. You may list the several places you have wanted to visit, the several picture shows you have recently seen, the people whom you would like to meet, the ways you would like to spend your vacation, and numbers of other suggestions of this kind. If you write all these down, they frequently will call to mind additional ones.

- Assignments:*
1. To what extent is it possible for a theme subject to meet all the requirements or standards cited in this section?
  2. Recall the subjects of compositions you have previously written and, in the light of the present section, decide which were well chosen and which poorly chosen.
  3. Check two of these subjects and see how many of the criteria given in this section are satisfied by each.
  4. Decide on a subject which you think meets all the requirements and submit it to your classmates for their criticism:

**2. How to provide something to say.** In writing a composition, you often have nothing to say. This is a most unfortunate situation. The basic reason for this difficulty lies in your choice of the wrong subject, or in an assignment of a subject that is not suited to your particular case. In such a difficulty the best procedure is to go ahead and find something to say. The following suggestions are offered for solving this problem.

*Make use of your own personal experiences.* They often provide usable material for the main body of the paper. Thus, if you are assigned such an abstract topic as "The Benefits of Democracy," you may at least illustrate some of your points by telling about persons who were aristocratic, snobbish, or who considered them-

selves better than ordinary people, and tell the results of this attitude.

*Draw subject matter from other courses which you are taking.* Thus, characters and events in history, experiments in the science laboratory, or projects upon which you are working in the shop may furnish valuable material.

*Observe what goes on around you.* Frequently close observation will yield considerable useful material, if carried on purposefully. For example, if you are assigned to write a theme on birds, you may be able to get enough material for your theme during a fifteen minute walk by noting the actions, colors, sizes, songs, and other peculiarities of the birds in the trees as you walk along the street or in the park.

*Do some reading.* Reading will provide an abundance of material on any subject if it is well done and wisely directed. Just as a minister or other public speaker must resort to wide and extensive reading in order to provide something worth while to say to his audience, so a composition student must resort to the library for necessary material to meet his needs. More use of this method would improve the quality of themes written, and would also remove much of the unpleasantness of theme writing which results from writing without having anything to say.

*Talk with people who have had experience in the field chosen for your theme.* For instance, in your compositions you may do something comparable to what is done by Bruce Barton, George Ade, and other men who write articles for the magazines. They do not trust their own information and experience as the sole basis for their articles, but rather interview such men as Henry Ford, Thomas Edison, and Charles Lindbergh and re-

port the ideas and viewpoints secured through the interviews.

*Let the problem "soak" for a period of time.* This is a very effective means of assembling something to say. Speakers who are preparing addresses use this method regularly. They first get the subject in mind, then during a few days of meditation they assemble numerous good points accidentally and almost unconsciously. These points probably would not have been thought of at one sitting, however industrious the search may have been.

- Assignments:*
1. When you have "nothing to write," is it more often due to a real lack or to a poor method?
  2. Compare the value of writing based upon your own experience with that based upon reading.
  3. Select some topic and see how many points you can jot down about it, out of your own experience and thinking, at one sitting. Keep these in your notebook and see how many you can add in the next twenty-four hours.
  4. See how many points you can add to the above list by reading and searching for new information.

**3. How to organize material.** Students often find themselves confused by the mass of ideas which they are trying to present. This suggests the need of definite methods of arranging and organizing the different material in the theme. You should give attention to the organization as such, rather than consider organization as a by-product of the subject-matter itself. You must do some thoughtful and deliberate planning by such methods as are listed below, and arrange your points in consistent order. Merely having a great deal to write does not by any means guarantee your writing a good paper.

*Study the material carefully, and work out several different outlines or plans of organization before settling finally*



*upon any one.* Most subjects can be treated in several different ways, but usually there is one best way; and this you are not certain to find unless you compare and evaluate several possible ways.

*Do your planning and organizing before you write the theme out in full.* Make an outline and then write, rather than write first and outline afterward. What you have once written is not likely to be very radically reorganized later on, even though you see its imperfections, because of the natural distaste which most people have for taking something to pieces and putting it together in a different way. The practice of writing a theme out in full in a rough draft and then re-writing it in revised and reorganized form ordinarily results in a lower grade of product than the policy of outlining the entire treatment before writing the first draft.

*Use small cards to help you in making the original outline.* Write down one and only one point or thought on a card. Fill out as many cards as there are ideas which you wish to include, regardless of the order in which they first come into your mind. When everything has been reduced to written form in this way, the cards may be sorted, classified, and arranged in the order in which the points are to be presented, after which the outline may be written out on a sheet of paper preliminary to the actual writing on the first draft.

*Make the outline in some detail, and then put it aside and write spontaneously.* A few students report that the outline gives them a good start and that after the composition is written they use the original outline as a check. The feeling is that this adds considerable definiteness and system to the presentation without taking away the freedom, originality, and spontaneity. Some writers may

do well following this plan, but it should be used with caution by the student.

*Outline chapters or articles which others have written.* This practice directs attention to the major structure and plan of other people's writings, and constitutes a good model for your own. It is very helpful for practice in the development of ability to organize material.

*Have more raw material available than you include in the final paper.* The reason for this is that if you have an abundance of material you have greater freedom in its organization. You can leave out what does not fit well in one possible outline, or you can choose a different plan of treatment and leave out a different set of details or illustrations. Much of the difficulty in organizing papers results from having just enough material for the purpose and having to use ill-adapted details. The situation is comparable to the work of the stone mason. If he has just exactly enough stones for his wall he has much less freedom to work out a harmonious design than if he had a considerable number of extra stones of different shapes and sizes from which to choose.

*Pick out the best and most effective point with which to begin the paper.* Try to catch your reader's attention at the very beginning by giving something vivid and striking and something which will arouse an interest in what is to follow.

*Plan the order or sequence of points within the paper according to the nature of the subject with which you are dealing.* For example, in a narrative theme you would usually organize the material in the order of the time of happening. In description you might take up one part at a time, and then go to the one next to it, and so on. You should, however, avoid forming the habit of following a uniform style or pattern of organization for sev-

eral different themes. For example, it would be possible to organize almost any theme or subject under the rather mechanical and stilted outline: "who, what, when, where, how and why;" but to make regular use of such an outline would be of doubtful wisdom.

*Assignments:* 1. In what respects does the making of an outline before writing resemble making a systematic search for some small object lost on a vacant lot?

2. Criticize the outline of some convenient chapter or article, pointing out the ways in which it needs improvement.

3. Using the list of points which you assembled in connection with the exercise in the previous section of this chapter, write each point on a separate card and then arrange them in the best outline you can. When you are through, try re-arranging them in some other sequence that is equally good.

4. In what kinds of writing is it permissible to disregard outline and organization?

**4. How to obtain the benefit of a real audience.** One reason why many compositions lack effectiveness is that their writers know that no one will ever read them except the teacher, and they therefore lack a real incentive to do good work. You may correct this situation in a number of different ways.

*Write for the school paper.* Nothing will stimulate you to do your very best quite so much as the realization that what you write is to appear in print. One of the finest ambitions for any composition student to have is to see his articles in print. Furthermore, the satisfaction which comes from achieving this goal is enough to induce the most vigorous efforts to write articles worthy of acceptance in the school paper.

*Save all your papers for future reference.* Imagine yourself reading them years afterward, very much as you would your diary, and try to write your papers now so that they will make the most favorable impression upon you later.

*Read your paper aloud to yourself, and thus make yourself for the time being a real audience.* You will sometimes be surprised at the way your own words sound when you hear them, and will have an incentive to further improvement.

*Read your papers aloud to a few of your friends, classmates, or members of the family.* You frequently will make valuable revisions and improvements in the light of criticisms given by sympathetic critics.

*Write your theme to some particular person.* Just as the wise hunter does not shoot at the whole flock of birds, but rather singles out one individual bird at a time, so the English student frequently is benefited by choosing some one person whom he knows to be fairly representative of human beings generally, and then writing the message which he feels will impress that individual favorably. This is the same principle in composition as we find represented in fine art. The artist who creates a masterpiece frequently does so under the inspiration of a great love or a great sorrow centered around some person, and in expressing himself with reference to that person touches a universal note in human hearts.

*As you write, imagine yourself delivering your message orally before a group.* Think how the words would sound if you were speaking them in conversation, and ask yourself if you would phrase the point in the same way if someone were standing before you. The effort to introduce this conversational tone into your style of writing helps tremendously to make the message strike the right response through the eye when it reaches the reader.

*Be prepared for a critical as well as a sympathetic audience.* When you write, be assured that while those who read your message will for the most part be friendly

and sympathetic, and willing to overlook your mistakes and shortcomings, there is ordinarily a certain percentage of an audience that will react negatively, will notice your faults, and will magnify little things that may be used against you. Whatever is written or spoken must to a certain extent pass this sort of censorship.

*Vary your message and the presentation of it to fit the particular audience for which it is designed.* You must write more simply for an amateur or uneducated audience than for a group of literary experts. You should choose illustrations which are likely to be familiar to your readers, and in general write your paper on the level adapted to your readers.

- Assignments:* 1. What writing do you do outside of school for which there is a real audience?
2. Write a short paragraph or theme with a certain audience in mind and then rewrite it to adapt it to a different audience.
  3. In what specific ways would you change your writing for: (a) children *versus* adults; (b) mere acquaintances *versus* close friends; (c) boys *versus* girls; (d) business *versus* personal correspondence.

**5. How to master the mechanics of punctuation, capitalization, and the like.** Incorrect punctuation and capitalization account for a very large percentage of all errors in written composition. Mastery of these mechanical details does not by any means guarantee a high quality of composition, but the failure to master them often causes you to be classed as ignorant and illiterate. Below are a few suggestions to aid you in conquering these difficulties.

*Find out what the correct forms actually are.* Unless you know that commas should be placed around "however" it is unlikely that you will consistently place them there. Knowledge of what is correct is, therefore, a very important first essential, even though it does not finish the task of acquiring mastery.

*Get a good manual for reference on new or unusual constructions.* The best writers occasionally face problem situations in which they need authoritative information, and for this purpose they ordinarily own some good manual of style to which they can turn when in doubt. The actual personal ownership of such a book is strongly urged for every student who earnestly desires to improve his writing.

*Drill on the correct usages until they become automatic.* Knowledge of the rules must be supplemented by habits of applying them automatically. Every time you use the correct forms you strengthen the bonds, and every time you use incorrect forms you weaken them. If you really want to perfect your habits, and are willing to pay the price, you can reduce the ordinary mechanics of English to the automatic or habitual level in a very short time through consistent and systematic practice.

*Concentrate your practice upon the correction of your errors.* Make a list of your most frequent mistakes, find the correct forms in each case, get an example to illustrate each correct form, and then use these examples as models by which to pattern other sentences which involves the same temptations to error. There is more need for drill on those usages which you tend to violate frequently than on those which you seldom violate at all. In other words, improvement of mechanics takes place largely through correcting specific errors, rather than through practice which is distributed over the whole field.

*Find out the reasons for the correct practices.* Merely to put commas around "however" because "commas ought to be around 'however'" is a blind and futile procedure. If, on the other hand, you learn to do this because the commas represent a natural pause or break



in the sentence as it would be uttered in ordinary speech, you have a reason. This reason helps you to learn and practice the correct form more consistently. In this connection we might mention that a reasonable knowledge of grammar is of service in mastering punctuation, particularly when grammatical points are studied in the solution of specific problems.

*Strive to develop to the point where you can punctuate and capitalize automatically, rather than by rule.* The expert literary artist does not stop to think why he uses a comma at a given place, but rather uses it because he has a "feeling for it" there. In his case this feeling is quite dependable and trustworthy, because he has mastered his technique long before. In your case, however, your feelings and intuitions regarding punctuation may be very misleading in the early stages. In other words, beware of intuition and feeling as your main guide in the mechanics of English until you reach that more advanced stage where those feelings and intuitions rest upon a trustworthy foundation. It will usually be better, in the early stages, to rely on your knowledge and intellectual analysis of the thought of the sentence.

*Examine critically the writings of others.* Observe and criticize the use of commas, semi-colons, etc., in textbooks, newspapers, and magazines. A good practice is that of examining material that is likely to have some errors, rather than devoting all your time to the very highest type of literature. Thus, if you go through the newspaper you may find more to criticize than in a literary classic, and the likelihood of finding errors causes you to watch punctuation more critically than if no errors are present.

*Proof-read everything you write.* Many of your mistakes as regards small mechanical details are due to careless-



ness which a single proof-reading would enable you to find and correct.

*Have your writing criticized and corrected by someone who knows good form.* Constructive criticism is one of the finest devices for improving any ordinary skill. You should welcome the opportunity to write a theme which your teacher is to correct and hand back to you, and should make every effort possible to profit from the criticisms which she gives.

*Assignments:* 1. To what extent is punctuation a mere matter of individual taste?

2. How many of your errors are due to ignorance and how many to carelessness? How can the latter be cured?

3. To what good source do you go for reference when you are faced with a difficulty about how to punctuate something you write?

4. Make a list of the blunders which you discover in your work. Put these on a definite page in your notebook and keep this as your permanent blacklist. Check off any item in the list as soon as you have absolutely mastered it, and add new items as you discover them to be needed.

**6. How to improve spelling.** If you have had good training in spelling during your elementary-school education this topic will be of little interest to you. If, however, you are one of the many who for some reason or another have trouble with spelling, the following points may be of service.

*Never take a chance on the spelling of a word.* Be sure you know how to spell a word before you write it down. Hurry is no justification for guessing at whether a word ends in "able" or "ible." Each misspelling does more to upset your spelling habits than several correct spellings can do to repair the damage. It is most unwise, therefore, to take chances. Let your motto be "Safety first."

*Devote extra study to the words which people in general most frequently misspell.* Numerous tabulations of spelling errors have been made by experts, with the result that it

is known, for example, how much more often the word "separate" is misspelled than the word "busy." Check yourself by such a prepared list, and make sure you can spell every one of the one thousand most commonly misspelled words. You will thereby eliminate most of your spelling difficulties.

*Keep a blacklist of your own individual spelling demons.* Every word that you have misspelled in any of your own compositions should be written down in a section of your notebook set aside for the purpose, and special effort should be made to prevent similar occurrences in the future. When you have mastered a word on the blacklist you may erase it and thus free more of your time and energy for others more recently added. A consistent following of this practice for a year's time should clear up practically all the spelling difficulties which will ever trouble you.

*Pay special attention to the difficult parts of troublesome words.* For example, the word "receive" presents only one real difficulty: namely, the order of the "e" and the "i." Likewise, the word "desirable" offers as its main difficulty the choice between including or omitting the "e" before the "able." Mastering the one point solves the entire problem.

*Stamp the visual image of the word upon your mind.* You do practically all your spelling in connection with writing, and if you have good mental imagery a misspelling will look wrong to you and thus you can correct it.

*Pronounce the word.* If a word is spelled as it is pronounced, the correct pronunciation almost solves the spelling problem. If, on the other hand, it is pronounced differently from its spelling, a little practice in the correct pronunciation will serve to fix in mind the

contrast between the two, and thus prevent your spelling from being misdirected by the pronunciation.

*In a few rare instances study spelling rules and the derivation of words.* As a general rule these analytical methods of learning spelling are of doubtful worth because the English language is so irregular and inconsistent in its spelling. The exceptions to rules are so numerous that words can be learned much more economically by rote memorizing than by those more intellectual methods. Rules are useful, however, in a few special situations or cases.

*Assignments:* 1. Criticize the statement that inability to spell is a sure sign of laziness.

2. Report to the class the method that you have found most helpful for improving your spelling.

3. How many of the errors which you make do you make when you are in doubt and take a chance?

4. Go through a number of your old compositions for misspelled words and make up your own spelling dictionary or blacklist of individual spelling demons. Add new words as you find them and scratch off old ones as you master them.

### **7. How to secure correctness in grammatical form.**

To a considerable extent the writing of grammatically correct English presents the same problems and calls for the same methods as have been mentioned in connection with spelling and punctuation. There are, however, differences in regard to the application of these rules, and certain other special considerations which should be mentioned.

*When in doubt, look up the point instead of dodging the difficulty.* A very common practice for a student is to change his mind and say something else than what he intended if he is confronted by a question of grammar to which he does not know the answer. This solution enables you to say a perfectly correct sentence, but if it is not what you set out to say, you are no more capable

of effective self-expression than you were before. The policy of changing your sentence and dodging the issue is simply one of putting off the day when you really learn how to use English forms correctly. The best time to look up a point is when you need to know about it. If you stop and look it up then, it will mean more to you than if you look it up at any later time.

*List your most common and most serious blunders and concentrate on their correction.* The principle of the blacklist for grammar errors is very similar to that of the blacklist for spelling errors. It has proved a very effective method in the case of many students. Whenever you discover an error in your writing or speaking, take the trouble to write it down in a list of similar blunders which you are trying to overcome. You will find that it is much easier to help get it on your mind, so that you will not commit the same blunder again.

*Learn numbers of examples for each grammatical rule or principle.* The big danger about grammatical knowledge is that it may fail to apply when it is needed for a particular situation. It is entirely possible to be able to recite a given rule, and yet violate it in actual speech without being aware that any inconsistency is involved. It is very important, therefore, that you learn each principle or rule in connection with a large number of cases to which it applies, in order to make it effective.

*Carry the learning from the knowledge stage on to the habit stage.* When you are sure of a new expression, use it several times in order to reduce it to a habit. Rules of grammar are intellectual in nature and do not have much to do with actual practice. On the other hand, actual use of language is primarily a matter of habit. It goes forward so rapidly that you do not have time to think. Knowledge is good as a basic preparation for

correct grammar habits, but it does not complete the learning task.

*Check what you write to detect careless blunders.* Often you make a grammatical blunder because you are thinking of what you are going to say or write and forget what you have expressed in the first part of the sentence by the time you get to the latter part. Thus you do not discover that you have any grammatical difficulties in your sentence. When you read your paper over, however, you go through it at a more rapid rate and have a better chance to check the little inconsistencies which you have not observed during the slow and tedious process of preparing your paper.

- Assignments:*
1. Why is it worse to make an error in writing than in speaking?
  2. To what extent is correct grammatical use a matter of knowledge and to what extent habit?
  3. Explain why you may err when you know better?
  4. For one day let every member of the class record all errors of grammar which he hears or sees in writing and report these to a class committee which will organize a composite report on the most prevalent errors in the school.

**8. How to develop naturalness of style.** One of the characteristics of the good writer as contrasted with the novice is the smoothness, simplicity, and naturalness of what he writes. The novice is likely to manifest a stiff, artificial, formal, or jerky tendency in his expression. Below are a few suggestions which relate to this phase of the problem of writing.

*Use simple and brief sentences in preference to long and involved ones.* It takes a greater artist to master the long sentence than the short one, just as it takes an unusually good swimmer to swim the English Channel. It is well to avoid the risk that is incurred in connection with long sentences unless you are a good writer.

*Do not overestimate the intelligence of your reader.* Ordinarily it is better to make your writing too easy for your reader by using simple and elementary terms than to confuse him by using words that are too abstract. It is said that some newspapers refuse their reporters the use of a dictionary, claiming that a reporter should not use a word which he must look up, since his readers would probably need to look it up also.

*Do not try to copy another person's style in every detail.* No two people will write in the same way, just as no two people have the same kind of personality. What is natural for one is highly artificial if imitated slavishly by another.

*Beware of flowery language or oratorical flights.* It is better to be prosaic and natural than "literary" and artificial. A common mistake of beginners is that of trying to write in a style similar to that of the preamble to the United States constitution.

*Enrich your supply of experiences so that you have something to say without forcing.* The better the message the less is the need for dressing it up artificially. Some people always make a good impression on others, regardless of the costumes worn, because they have good personality and genuine merits. Likewise, a composition which is sound in its fundamental message will stand on its own merits and will need little of the artificial make-up.

*Learn how to think in terms of outlines.* The formality and stiffness of the writing of some people may occasionally be traced to an effort to write from an outline when they have previously been accustomed to writing as the thoughts came into their minds. Special attention may need to be given to overcoming this difficulty during the transition stage, but once this point has been



passed the use of the prepared outline will ordinarily aid rather than hinder the development of naturalness.

*Read your paper aloud.* The natural tendency in writing is to be much more artificial than you would be in speaking. If you read aloud what you have written you are likely to discover the unnatural elements, and thus you are able to correct them.

*Paraphrase the writings of others as a form of practice, stating points simply and briefly.* If you read a paragraph in a book, and then state its main point in your own words, you get a very good training in straightforward and simple expression which helps you to form habits that will apply when you write messages of your own.

*Assignments:* 1. To what extent do you think it possible to acquire the style of some successful writer?

2. To what extent will the reading of good literature help you acquire a natural style of writing? Explain.

3. Criticize the statement that simplicity is the key to good style.

4. Which of the points in this section do you think apply most to you?

### **9. How to acquire and use an adequate vocabulary.**

Increasing your vocabulary is an important step in becoming a good writer or speaker. Each new word acquired is comparable to each new tool in a workman's kit, or each new soldier in a general's army, and is to be highly prized and eagerly sought after. Some devices which help in the process of vocabulary building are mentioned below.

*Acquire a good supply of ideas and experiences upon which to base words.* Words themselves are simply abbreviations or condensations of experiences and have little excuse for existence except as they represent something else. It is safe to say that the size of vocabulary varies in proportion to your contacts, extent of reading, and range of experiences. If you lead a simple life, meet few people, read few books, and seldom get out of the



limited confines of your daily routine, you will need few words to describe what you have in your mind and will therefore acquire few words.

*Purchase and keep handy a good dictionary in which to look up words as they are needed.* Ordinarily you will fail to look words up unless the dictionary is conveniently accessible, because if you have to wait until a dictionary is at hand you naturally tend to forget about the word.

*Do not pass by new words without challenging them for their meanings.* Stop at the time you find them and look up their meanings. This practice may be a bit slow and tedious when you first begin it, because you may find several new words on every page you read, but after a short time you discover that most of the new words you have already looked up and you need only to consult the dictionary for a relatively few new ones.

*Read extensively in books by various authors and on widely different subjects.* Each author has his own peculiar vocabulary that is different from that of other authors, and each subject involves a number of new words that do not occur in other subjects. By sampling different authors and different subjects you expose yourself to a maximum number of new words, and expand your vocabulary at a rapid rate.

*Listen to the speech of people who have large and choice vocabularies.* A word which you hear spoken is more likely to get into your own speaking vocabulary than one which you see in print. For this reason attending lectures and associating with friends of culture and refinement helps you to feel natural when you use new words.

*Deliberately hunt for substitutes for words which you already know.* After you have written the first draft of your composition take a dictionary and look up equivalent words to use in the place of some of your descrip-

tive terms. Choose as the substitute for any given adjective in your paper that one of its several dictionary meanings which you think is most appropriate to express the shade of meaning you have in mind. This purposeful search for synonyms brings you into contact with a large range of words of closely similar meanings, and enables you to become skillful in picking and choosing those that express your exact thought.

*Make a deliberate effort to use new words which you acquire.* There is a big difference between your recognition vocabulary and your actual-use vocabulary. The tendency is for a word to remain in your recognition vocabulary and never gain adoption into your daily-use vocabulary unless you actually go out of your way to use it a few times. You have to "wear the paint off" a word in order to make it function. It is well to hunt for chances to use a new word, or even to stop and make up a few sentences involving it, and then say these aloud in order to get the desired feeling of familiarity.

*Learn the spelling and pronunciation at the same time as the meaning.* A new word which you cannot spell you are likely to avoid when you are writing. Likewise one which you cannot pronounce with confidence you will certainly leave out of your speaking vocabulary.

- Assignments:*
1. Arrange a page in your notebook upon which to write down new words which you wish to make your own.
  2. List all the situations, opportunities, or ways you can think of in which you can get practice in using a new word.
  3. Select a few common adjectives, adverbs, or verbs, and after each one write as many other words as you can with the same or closely related meaning.
  4. Rewrite a paragraph from any convenient book three times, using different words each time and yet preserving the original thought as accurately as possible.

**10. How to revise, criticize, and polish what you have written.** The difference between correct and in-

correct work often is simply a question of the way you put on the finishing touches. The following devices are recommended by students and experienced writers for the improvement of this final revision process.

*Allow for a second draft.* Do not expect yourself to turn out finished work without making corrections and revisions. The original manuscripts written by some of the world's most famous literary artists show revision after revision. Certainly the ordinary student should not hope to succeed in writing a perfect first draft when men of world-wide fame as writers cannot do it.

*Space widely between lines in your first draft in order to allow room for revisions.* If there is plenty of margin and plenty of room between lines to mark out words and to insert new ones above them, you will make many changes and improvements which you would not make if you had to write them on separate pieces of paper, and pin these to the original sheets. The easier you make the task of revision the more likely you are to carry it out thoroughly.

*Allow a period of time to intervene between writing and revision.* The old advice, "write not in haste and revise in cold blood," is very sound doctrine. The reason is that after you put away what you have written for a few hours or days you come back to it with a new and fresh point of view which makes you more critical.

*Skim your paper hastily to criticize its larger organization, in addition to reading it carefully for details.* If you simply read your paper through with attention to every little item, you necessarily overlook the larger structure and the sequence of the thought. This minute reading is necessary, but it is not the only thing that is necessary. As a general rule it should be done after the paper

as a whole has been glanced over and criticized for its major arrangement and organization.

*Read your paper aloud.* Many inconsistencies and irregularities that are difficult to detect when you are reading silently will show up emphatically during oral reading. It is true also, however, that certain blunders may be more readily detected when you are reading silently than orally, and therefore both methods may well be applied to the same paper.

*Read the paper aloud to others.* This gives a somewhat better check than when you read it aloud to yourself, because other people are not so familiar with what you have written and will not pass over the rough places as readily as you do when you read your own material.

*Have others read your paper silently.* When you read it to them orally you cover up some of your mistakes, such as incorrect punctuation, by giving the inflection or expression which conforms to your meaning rather than that which your punctuation actually suggests. Other persons, reading your material silently, will not have the benefit of your oral interpretation of it, and hence will be more likely to notice passages which are poorly constructed.

*Assignments:* 1. With the suggestions of this section in mind, revise something you have previously written and bring it to the most perfect state possible.

2. Which of the points in this section did you find most applicable in the above task?
3. What do you know or what can you find out about the way in which novelists and other great writers revise their works?

**11. How to secure artistic as contrasted with merely correct expression.** There is considerable difference between a fine art and a practical art, and this difference is found to exist in the field of writing as well as in other fields of art. For example, quoting from *Hamlet*,

the passage, "I am thy father's spirit," is much more artistic than another expression which Shakespeare might have used, "I'm your old man's ghost." While it is not expected that you will promptly become a literary artist, it is always worth while to strive to add at least a little of the artistic element to what you write, and for that reason the following suggestions are offered.

*Think your subject through before you put it into final form.* Artistic writing consists, in part, of clear thinking. A muddled thought is difficult to express in beautiful form. If you know what you want to say, you are free to devote your attention to perfecting or improving your methods of saying it.

*Be genuine and natural, rather than artificial and formal.* Let your composition represent yourself and be an outgrowth of your own personality, and do not try to imitate someone else. Just as the costume which is beautiful when worn by one young lady is grotesque when worn by her friend, so a style of expression which is becoming to some other writer may be hopelessly inappropriate for you.

*Fit the style to the occasion.* The attempt to express thoughts beautifully is conspicuously inappropriate in certain matter-of-fact situations, just as evening clothes should not be worn at a football game.

*Strive for simplicity.* Say what you want to say in the simplest way. Just as brevity is the soul of wit, so simplicity is the essence of artistic writing. Use short sentences and familiar words, in preference to highly involved sentences and unusual words.

*Do not mistake flowery language for beautiful language.* It is said that it takes a real artist to master the use of gay colors. Similarly, you are much safer in your writing if you stick to quiet shades and modest combina-

tions, and avoid gay coloring and attempts at striking literary effects.

*Enlarge your vocabulary.* If you have a wide range of words from which to choose, you can express your exact shade of meaning. A person of very limited vocabulary trying to describe a spring morning might simply say, "It was a nice morning." If, however, he had a very large vocabulary he would be able to choose between such words as pleasant, quiet, crisp, fresh, invigorating, etc. Your supply of words bears somewhat the same relation to your art of writing as the supply of paints and colors does to the art of painting.

*Use figures of speech to get more subtle effects than can be obtained from ordinary language.* Masterful use of the simile and metaphor represents one of the outstanding achievements of the literary artist. On the other hand, it is better to refrain entirely from the use of figures of speech unless you can use them naturally, appropriately, and consistently. Much of the absurdity of what is written by amateurs who are trying to be artistic may be attributed to unskillful and inappropriate use of figures of speech.

*Read the works of great literary masters.* This may enable you to acquire, through imitation, some small portion of their style. Much reading of artistic works accustoms you to certain attractive ways of expressing thoughts, and thus helps you to form such habits for yourself. This process may be speeded up somewhat if you read this material aloud in order to give yourself actual muscular practice in speaking according to the style of the great masters.

*Paraphrase.* Take a chapter from a real artist, read a paragraph or two, lay it aside, and write the thought that is expressed, using your own words. Then com-



pare what you have written with the original, noting points in which the original possessed superior beauty. Repeat the entire process on a new paragraph, and continue until you are able to rewrite the original thought in words that equal the artistic merit of the original.

- Assignments:* 1. What is the greatest danger in trying to write artistically?
2. Choose three paragraphs, one simple, one flowery, and one beautiful, and justify your estimate of each.
  3. Describe the view from your schoolroom window, using the principles set forth in this chapter.
  4. Take some very ordinary statement and see how many beautiful ways you can find to say it.

**12. How to profit by criticism from others.** Constructive criticism is one of the important factors in acquiring any skill. It is particularly important in learning good English. Human nature is so constructed, however, that criticism is hard to take and hard to utilize to the best advantage. The following methods may be of some service in enabling you to solve this difficulty.

*Ask for and definitely seek criticism.* Do not simply wait for it to be supplied. You should be more interested in your own improvement than anyone else is, and should be more eager to get the reactions of others than they are to give those reactions.

*Accept criticism in a kindly, sympathetic, and cooperative spirit.* This is often very difficult to do, but any other response certainly is inappropriate. Remember that when the teacher and fellow students correct your English errors they are really not correcting you. The whole situation should remain impersonal. If you feel offended, the tendency is for your friends to refrain from helping you the next time, and you continue in your old habits. Criticism may cause a temporary discomfort or dissatis-



faction, but this feeling is an important factor in changing your practice, or in causing improvement.

*Insist upon knowing the reason when a new mistake is called to your attention.* Find out why your expression was incorrect or inappropriate. Knowledge of the reason helps you to correct the original error.

*Make a record of the error when it is called to your attention.* Put it on your blacklist, so that you are sure not to commit the same mistake again. It should not be necessary for you to have the same blunder called to your attention time after time. If you do, this fact indicates that you are not doing your part to overcome your bad habits.

*Practice the correct form immediately after your mistake is called to your attention.* Take time at once to say your sentence over in the right way, or to write your paragraph again correctly, in order that the correct impressions may be strengthened and may help to erase or crowd out the incorrect ones.

*Learn how to be a good critic of others in order that you may help them to correct their mistakes.* Criticism of English should be mutual rather than one-sided, and you should be as willing to help your fellow students as they are to help you. In this manner you and your friends may become something of a mutual criticism club, and as a result all will be benefited.

*Exert will power against unkind criticisms.* Occasionally a few thoughtless persons are inclined to make fun of you for using correct English. Some persons seem to enjoy poking fun at those who earnestly strive to speak correctly. They make it difficult for you to keep up your courage at a time when the struggle would be hard enough even without such ridicule from unsympathetic sources. The best rule in such a case is to consider

the source of the criticism, and to forgive your unsympathetic critics because they do not know any better. A corollary of this is that you ought to avoid making fun of someone else who tries to use correct English.

*Assignments:* 1. What kinds of criticism have you found to be most helpful?

2. List all the ways you can in which you think criticism can be of service to you.

3. How can a person be a good critic of another person's writing?

4. Discuss the possibility of organizing a "Lamb's Club" for mutual constructive criticism of English.

**13. How to avoid relapses after correct usages have been learned.** The danger of relapses in English is just as real as that in connection with influenza or moral reform. The following are some suggestions which may help to prevent your backsliding after you have made a good start in the right direction.

*Master the correct usage in the first place.* You need to learn your English as thoroughly as possible in order that the correct bonds will be strong enough to persist in the face of temptation. Good learning is the surest protection against relapses.

*Devote a few minutes each day to reviewing and practicing the correct form.* Review what you have previously learned, in order to keep strong the bonds which are already established in your nervous system. Forgetting is just as natural as day and night, and can be counteracted only by reviewing to retain what you have learned.

*Strenuously avoid letting down in your standards outside of the English class.* Do not relax when you find yourself among your old friends who speak incorrectly. One such reversion to previous standards does more to break up new right habits, and to make you have to fight the

whole battle over again, than many days of consistent practice of the right usage can overcome.

*Occasionally try yourself out in the face of temptation.* Strengthen your will power by deliberately associating with persons who speak incorrectly, or by placing yourself in situations which tempt you to revert to your old habits. In this way you show yourself that you can resist temptation. The policy of running from danger is less likely to develop your complete self-mastery than that of boldly facing it and conquering it once for all.

*Atone for a slip by several correct repetitions immediately afterward.* Whenever for any reason you make a slip and use a wrong word, stop immediately and use the correct one enough times to erase the effect of the one blunder.

*Assignments:* 1. What causes relapses in English usage?

2. What have you found to be the most valuable means of avoiding relapses after you have learned the correct usage?
3. For what specific errors of your own do you feel the greatest need for correction?
4. Think over your situation and decide what person or persons you can best rely upon to "call you down" when you make a slip.

**14. How to overcome spoken errors which are seldom or never made in writing.** The average person has a different set of spoken errors from those which appear in his writings, and the problem of eliminating them is not an easy one. Many of them are made unconsciously. The following are a few methods to help you out of this difficulty.

*Associate with persons who speak good English.* The influence of their example may help counteract the wrong habits, and may result in an unconscious and incidental type of improvement in your spoken English.

*Drill yourself on those errors which tend to beset your oral speech.* Thus, if you once have your attention called

to the fact that you make such errors as saying "those kind," or "he don't," you should give yourself some extra drill to get rid of them.

*Be alert to discover your errors when you make them.* Listen to your own voice. Think about what you say. Watch for the incorrect expressions and register them so firmly on your mind that, as you say one of them, it will immediately "ring the bell" and warn you that you are on the wrong track.

*Slow your rate of speech down to such a pace that you can watch your sentence structure more closely.* Many spoken errors are due to haste, or to the habit of rushing pell mell through the sentence without time for consideration of its phraseology. If you think twice before you speak, you will express yourself more accurately when you do finally speak.

*Practice the use of shorter and simpler sentences.* Do not give yourself a chance to get involved in long and complicated sentences in which you forget your subject before you reach the verb. Break the long sentences up into several shorter ones.

*Make a game of mutual criticism.* This can be done in the home or among your friends. It is easy to develop such a group spirit that each member feels free to call the attention of others to blunders as they occur. A little of this practice will bring wonderful progress in the reduction of errors, because someone in the group is very likely to notice any mistake that is made and mention it.

*Assignments:* 1. Explain why associating with users of correct English improves your own usage.

2. Why do you make certain blunders in speaking that you would never make in writing?

3. What methods have you found most valuable in overcoming spoken errors?

4. List the spoken errors that you feel the greatest need of having corrected.

### **15. How to speak effectively before an audience.**

Probably one of the most badly neglected phases of composition in many schools, is that of oral English or public speaking. The ability to express thoughts to a group of people assembled as an audience is worth cultivating. For that reason you should be interested in the suggestions below regarding how to present a subject in public.

*First be sure that you have something to say.* The most effective gesture, voice control, and stage presence imaginable will not atone for the lack of a vital message. Study your subject until you are a master of it, and go before the group full of the idea you wish to present. Then the greater part of the battle will already have been won.

*Get under way promptly.* The use of long introductory remarks before beginning the speech usually does more harm than good, and reduces the interest of the listeners. Furthermore, it sacrifices a fine opportunity to give emphasis to your first point. The opening words in an address are in a position of prominence and secure such undivided attention that they are likely to make a great deal more impression than any other portion of the speech. Such an opportunity to present one good idea at the very start should not be spoiled by the inclusion of a few rambling preliminary statements only loosely related to the subject.

*Adjust the presentation to the intelligence, information, and interest of the audience.* The fact that you are interested in what you are going to say is not a sufficient guarantee that the audience will be. It is frequently necessary to revise your style of presentation after you

actually begin your speech because you discover that the audience is not responding well enough.

*Know the content of your speech well, but do not memorize it word for word.* The memorized speech is a very mechanical affair. You will find that it is very difficult to give it the spontaneity and naturalness of real conversation. Your effort to follow the words as you say them takes your mind away from the thought, and makes your whole performance routine rather than intellectual. Good speaking requires clear thinking, and the memorized speech is almost certain to be delivered without much thought about its content while you speak.

*Have available some very brief notes to aid your memory of the main points.* The fear of forgetting has a paralyzing influence, and frequently it actually causes forgetting. If, however, you have the main points written down on a card, and have this card in your pocket or readily available for reference, you have the comforting assurance that everything will go smoothly. Incidentally, it is well to remember that an audience does not object to your use of such a card for reference, and that ordinarily it is quite permissible for you to use your notes freely, openly, and without apology.

*Summarize the high points as you go along.* Make the big ideas stand out during the talk, so that the audience will be able to follow the outline. If you have three main ideas to present, be sure that the audience not only gets each at the time it is given, but that each listener may be able to go away with the distinct realization that there were three, rather than four, five, or two. Clearness of presentation is improved if the outline is displayed by such statements as "The second reason why you should support this movement is — — —."

*Speak in your natural voice.* Avoid the attempt to be "oratorical" by adopting a deep bass tone, or by the introduction of other strained and unnatural types of expression. Good oratory is achieved by expressing naturally and smoothly some thoughts that are worth expressing, rather by dressing up second-rate content in a highly unnatural delivery.

*Watch the audience as you talk.* Adjust your presentation to their response. The expressions on their faces will frequently reveal whether or not they have understood you, or whether they have been convinced of the soundness of the statements you have made. If there seems to be a doubt or perplexity in their minds, it is well for you to explain further, or to give other illustrations, and to elaborate the point until you see that you have won your hearers to a harmonious acceptance of your message.

*Let such gestures as you give be natural and spontaneous, rather than of the made-to-order type.* It is seldom advantageous to specify in your notes beforehand when to introduce this gesture and when that. It is preferable to speak your message as directly to the audience as possible; if there are to be any gestures at all, let them take care of themselves.

*Improve your ability through practice.* If you are really interested in developing your speaking talent to a high degree you will do well to join a literary society, debating club, or other organization in which you will have an opportunity to practice talking before small and sympathetic groups. Such practice affords very fine training as a preparation for more responsible types of speaking before larger audiences.

*Assignments:* 1. State all of the advantages you can of being an effective speaker.



2. List all the faults or shortcomings you have observed in speakers before audiences.
3. Think of some recent speaker who has talked in your school assembly and point out the specific factors that caused his effectiveness.
4. Compare your own success in speaking from memory and from notes.

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## CHAPTER III

### FOREIGN LANGUAGES

*"Language is the only vehicle for understanding; without understanding there can be no peace and no progress, but only distrust, enmity, war, and dissolution."*

PETER HAGBOLDT.

The study of foreign languages is subject to many of the same principles that govern the study of the English language. It involves many additional problems and difficulties, however, which are not so prominent in the study of English. Foreign languages have the reputation of being more difficult than many other high school subjects, and the percentage of students who fail to get passing grades in them is ordinarily somewhat higher than in some of the other subjects. Much of this difficulty and failure is due to improper methods of studying, and can be removed by adopting improved study techniques. In this chapter we shall consider some solutions for several of the principal difficulties involved in the study of the foreign languages.

**1. How to learn and remember foreign words.** Words constitute the fundamental units in a language; hence the learning of words is one of the fundamental tasks in learning a language. The way they are studied has much to do with the ease with which they are remembered, as well as the readiness with which they are used later. The following suggestions should prove valuable in this important phase of language study.

*Start with objects and actions instead of the foreign words for them.* Find the foreign names for the objects in the room, or the actions which you see going on, rather than looking up meanings of foreign words which are new to you. You should learn a word as the name for an idea which you already have, rather than as a translation of an English word. If studied in this way a foreign word will be associated with its meaning directly instead of with the corresponding English word.

*Learn words in related groups.* Master all the words pertaining to a given subject or situation at the same time, so that you have the vocabulary necessary to think and talk about that subject. When you learn the foreign word for the direction "north" it is easy and natural to learn "south," "east," and "west" at the same time. It is a good idea to learn "knife" along with "fork," "spoon," "cup," "plate," etc. When you learn "hand" it is a good thing to learn other parts of the body, such as "arm," "head," "nose," "eye," "ear," "foot," etc. Having acquired any such group of related words, you are in a good position to carry on conversation of considerable scope pertaining to that topic, and as the number of word groups increases the range of possible topics of conversation grows with it.

*Learn words in connected sentences.* The practice of studying vocabularies in column form is questionable because it does not give you the ability to use the words after you learn them. Instead of memorizing lists of foreign words and their English equivalents, it is better to practice saying sentences which contain the new foreign words. Thus, having learned such a word as "book," you should use it in such connections as "What is this?" "This is a book." "I have a book." "The book is here," etc. Words learned in such a way are available

to you for actual use, because they have been reduced to the habit or skill stage; but words simply learned in lists are difficult to use readily because they are based on mere knowledge without the element of skill.

*Infer the meaning of new words from similar English words.* Many foreign words which at first sight seem entirely strange will prove to be merely English words in disguise if you examine them more closely. Sometimes the foreign word resembles not its English equivalent but its cousin, as in the case of the French word *histoire*, for story. There appears to be little resemblance between *histoire* and "story," but the resemblance between *histoire* and "history" is obvious, as is that between "history" and "story." A little playing of hide-and-seek in this fashion will reveal the meanings of large numbers of words which would otherwise have to be looked up in a dictionary.

*Infer meanings from similar foreign words.* What was said in the last paragraph applies also to deriving meanings of foreign words from other foreign words. Often a verb and a noun have the same basic root or stem; and your knowledge of one assures you of the meaning of the other, if you only make a little effort to discover the similarity. A new word that is encountered will often be made clear and meaningful if you try to recall some other foreign word that resembles it.

*Derive the meanings of words from their context.* Words, like people, can be known by the company they keep. Oftentimes a word's meaning is almost unmistakably shown by its use in the sentence. You are constantly learning new English words in this way. In fact, a common device to show the meaning of a new word is to use it in a sentence where it will be supported by the meaning of the words before and after it. Sometimes the

meaning will not be very sharp and clear as a result of finding it used in a single sentence, but when it is found in later sentences its meaning gradually becomes more definite and exact.

*Supplement the methods already described by a limited amount of study of word lists.* Just as a dictionary is needed in English, and just as regular lessons based on the use of the dictionary are sometimes valuable, so there is a limited need for the studying of formal vocabulary lists in foreign languages. This formal approach to vocabulary, however, should be used as a supplement to the more natural ones already mentioned, rather than as the principal method of study.

- Assignments:*
1. How does building a vocabulary in a foreign language compare as to method with enlarging English vocabulary?
  2. Go through a paragraph of some foreign language and count the words that resemble English words.
  3. After having guessed at a word's meaning from context, look it up in the dictionary and see how accurate your guess was.
  4. Prepare for a debate on the relative values of learning words in columns or in sentences.

**2. How to make foreign language study contribute to English vocabulary.** One of the reasons that is commonly given for studying a foreign tongue is that it enriches your English vocabulary. This is no doubt true if the language study is carried on with this aim and if the methods employed are of the right kind. We shall consider here a few of the ways of making languages contribute to such enrichment of the English vocabulary.

*If vocabulary enrichment is a major purpose, study Latin rather than the modern languages.* Approximately half of our English words have been derived from Latin, the other half having come to us from such sources as French, Italian, Spanish, German, Greek, and Anglo-Saxon. Thus it is clear that Latin has more to offer than

any other single language in explaining and enriching the meanings of English words.

*Study a little of several languages instead of concentrating on a single one.* If the aim is to improve English, and not to gain a practical command of a particular foreign tongue, the general-language course has several advantages over the plan of concentration. Some schools now offer courses that compare and contrast the various languages, show their relations to our own, and help pupils to clarify their ideas about English. Such a course might, in a sense, be considered an English course rather than one in foreign languages, but, even so, it is rich in potentialities for enriching English vocabulary by means of the study of foreign word roots.

*Translate rather than use the direct method.* For purposes of aiding English vocabulary, translation is preferable to the direct method. It involves the definite search for English equivalents of foreign words. It stimulates comparison of words and searching for exact equivalents that bring out precise shades of meaning. Good translation is a very exacting process, and is very likely to result in an improvement of your English vocabulary.

*Translate into rather than from English.* The search for the exact English equivalent for a foreign idea involves comparing several English words that have similar meanings and choosing the one which brings out the precise shade of thought desired. This process develops the power to discriminate between English words and refines the meanings which are associated with them. On the other hand, when you translate from English into the foreign language, all this comparison and word analysis is applied to foreign rather than English words, with little improvement of your English vocabulary.

*Strive for a polished rather than a crude translation.* The

general idea of a foreign language sentence may be expressed in a few common words, but a polished or finished translation will require the use of English words of a more specialized sort. The more effort you make to bring out the subtle shades of meaning in the material translated, the greater are the rewards in terms of mastery of English vocabulary.

*Start with English words and go back to their foreign origins.* You make greater improvement in English vocabulary by working from English back to foreign roots than by working in the opposite direction. Learning foreign words first may pave the way for a later discovery of their relation to English, but it does not by any means guarantee the discovery of the connection. On the other hand, time effectively spent in studying the foreign origins of English words has its value in terms of increased understanding of English.

- Assignments:*
1. Write down five common English words. Then look up their origins in a good dictionary and tell what you discover regarding the kinship of different languages.
  2. Think of a few English words whose meanings you acquired originally through a foreign language, and state in detail how you learned them.
  3. Select a page at random in a good dictionary and find out how many words on it came from each of the different languages. What do your findings suggest?
  4. What are the advantages and the disadvantages of studying a foreign language with the aim of improving English vocabulary?
  5. Choose some foreign language root and make up as many English words as you can that are based upon it.

**3. How to acquire the elements of foreign pronunciation.** The speaking of a foreign language is ordinarily one of the most important phases, under conditions in which languages are now taught in schools. It is even more important as the languages are used in practical life. The acquisition of correct habits of pro-



nunciation, therefore, should be a matter of the greatest concern. Some suggestions on how to do it may help.

*Imitate a good model.* Find someone who pronounces the language well and copy his pronunciation. Ordinarily, this person will be your classroom teacher, but it may be well sometimes to make contacts with natives of the land in which the language is spoken. Many language instructors have learned their languages in schools and have not had the opportunity to learn them as they are spoken abroad. Some languages are pronounced so differently from English that it is difficult to learn to speak them correctly without the aid of a very good model to imitate.

*Engage in an abundance of oral practice.* A natural outgrowth of the point just mentioned is that you should say the foreign words and sentences aloud a great many times in order to fix permanent habits and nervous impressions. The correct mental images will then remain with you even when your teacher is out of reach. Just as you cannot learn to swim without swimming, you cannot learn to speak a language without a great deal of oral practice. You should not only practice while your teacher is present to correct your errors, but you should also continue your practice alone in order to make permanent the impressions thus established.

*Participate in class concert drills.* If all your oral practice under teacher supervision were carried on individually, with the present sizes of classes, each student would have only a minute or two of oral work each day. Consequently, language teachers have adopted the device of having oral drills in concert in order to give all members of the class a chance to practice pronunciation at the same time. The fact that the sound of your individual voice is lost in the mass and may not come di-

rectly to the teacher's attention should not cause you to make less effort. Concert drills, if entered into conscientiously, will teach you correct pronunciation just as surely and naturally as participation in group singing will teach you the words and tune of a new song.

*Isolate particularly difficult sounds for special drill.* In every language there are some sounds which simply do not exist in English and which require unnatural placement of the vocal organs. Some examples are the French *u*, the Spanish *rr*, and the German *ch*. Although, as a general rule, practice should proceed by whole-word units or connected sentences, there are times when it is better to stop and practice a given letter or syllable a number of times until you master it thoroughly, and then to go ahead with words and sentences again.

*Learn the rules for those phases of pronunciation which are regular and are subject to rule.* The rules for the placement of the accent in Spanish are very simple, definite, and helpful. Similarly, there are rules in other languages which are helpful, for those aspects which the rules cover. No foreign language, however, can be reduced to rule in all its aspects. Furthermore, a knowledge of rules does not guarantee their application in actual practice, any more than a knowledge of right and wrong guarantees a spotless character. Rules are good supplements to other methods of learning foreign pronunciation, but they are not sufficient.

*Use the phonetic script in French, particularly if you must do a great deal of your studying alone.* Experts have developed a phonetic script which might be considered a universal alphabet, in which each elemental sound in any language is represented by a special letter or symbol, different from that for any other sound. It resembles the familiar diacritical marks in English, but is

more extensive and elaborate. If you must learn a language such as French, whose spelling is a poor guide to its pronunciation, you will find the phonetic script extremely useful. This is particularly true if you do not have a teacher readily available to tell you the pronunciation of new words as they are encountered. Spanish is so regular in its spelling and pronunciation that the phonetic script has little to offer in it, and German is also usually taught without it.

*For some purposes study the structure and positions of the vocal organs.* The science of phonetics owes much to the systematic study of the anatomy and physiology of the speech apparatus. Plaster models of the various parts have been made, elaborate charts have been drawn, and minute analyses have been made to discover exactly what is done by each part of the vocal apparatus in making a given sound. All of this has its place in the work of the expert, and occasionally in the work of the beginning student. In general, however, it is unwise for you to approach foreign pronunciation mainly from this angle. A little such study may help you learn the French *u* or the Spanish *rr*, but most sounds are better learned without your becoming self-conscious about the placement of your vocal organs. While this question is still somewhat debatable, the weight of evidence seems to indicate that the imitation method is psychologically more sound than is the method of physiological analysis.

- Assignments:*
1. Describe any experiences you have had with foreign language phonograph records or radio talks, and tell what value you think these had for you.
  2. What parallels can you draw between learning a foreign pronunciation and learning to typewrite or to play the piano?
  3. Tell what was your greatest difficulty in learning to pronounce a foreign language and how you overcame it.
  4. Find a short rhyme or jingle in a foreign language which you have

studied and repeat it orally until you can make it sound like poetry. What problems and methods are suggested by this experiment?

**4. How to make the spoken language sound like the speech of the natives.** There is a great gulf between merely the pronunciation of a language and the fluent and natural speaking of it. We all know foreigners who have learned English quite well but who are readily recognized as foreigners because of their peculiar accent or inflection. Likewise, we have known children in the lower grades who could pronounce correctly every word in the lesson but whose oral reading did not sound at all like natural speech. The suggestions below are offered in order to help bridge this gulf between mere pronunciation and normal fluent speech.

*Strive for the conversational tone of voice.* Many beginning language students read or speak as if they were doing a formal exercise rather than conveying ideas to others. You should keep your audience in mind and try to speak naturally and conversationally. Having acquired the habit of putting expression into what you say, you will still need to strive diligently to overcome your peculiarities of accent, articulation, etc., but you will at least have made the first step toward naturalness of expression.

*Establish intimate contacts with natives of the country where the language is spoken.* With regard to this particular difficulty, there is no adequate substitute for the native as a teacher. The school-trained foreign language teacher may do well in other things but he is likely to have a somewhat unnatural style of speech himself and thus be unable to set a perfect model. Even daily contact with natives who speak perfectly will not guarantee a perfect style of speech, but it is an important first essential.

*Live in a home where the language is spoken.* Persons who go abroad with an interest in acquiring a foreign language sometimes take quarters in French, Spanish, or German homes and thus try to get a natural command of the language. A similar function is performed in colleges and universities by special dormitories or residences in which natives from the foreign country and American students of that language reside under the same roof and use the foreign language for communication. Language clubs and language tables in the dining rooms or cafeterias are used in high schools to provide some of this same service.

*Make use of foreign-language phonograph records.* Numbers of systems of language instruction by means of phonographs are now in use. It is possible to get records made by persons who speak the language almost perfectly. A small collection of such records may be quite useful as a substitute for a native teacher, as you can make each one repeat again and again while you try to imitate more accurately. Some schools even go a step farther, recording the voice of the student so that he may hear himself and compare his own speech with the model imitated.

*Employ techniques similar to those used in courses in public speaking.* The teachers of public speaking and oral English have evolved various specialized methods of bringing about changes in the speech habits of their pupils. Many of these are applicable to the improvement of foreign as well as English speech. A good text on public speaking, therefore, may be a useful supplement to this brief treatment of the present problem.

*Assignments:* 1. Practice a sentence or two in the language you are studying and say it to the class as you think the foreigner would say it. Ask for criticisms.

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2. Ask some foreigner who speaks English unusually well how he got rid of his foreign accent, and report the answer to the class.
3. Draw up the best plan you can whereby you and your classmates could get the advantage of regular contact with those who speak the language fluently and naturally.

**5. How to be able to speak the language freely outside of the classroom.** Many a foreign language student has finished his course at school with a high mark and a feeling of success, and yet has been unable to put the language to use in practical situations. Ordinarily, this feeling of disappointment is inevitable, because it is virtually impossible to acquire a perfect mastery of a language in such a short time as is commonly devoted to the languages in schools. The bitterness of this disappointment, however, may be reduced somewhat by adopting methods of study which contribute more to the practical use of the language.

*Do your best in the classroom.* To a large extent the language is the same in school as on the street, and what you learn in school will have its effect upon what you can do on the street. The impatient desire of some students to "go and learn the language directly from the natives" is usually unwarranted. If the whim is indulged, it seldom leads to the desired mastery. If you do your best to learn the language in the classroom you will make the first step toward a mastery of it for use outside.

*Learn by the direct method.* If you wish to use the language in practical life situations, you should study it by the direct rather than the translation method. You must learn to think in the foreign tongue rather than in English, because the latter method is too slow to permit of practical use in ordinary situations.

*Build up a practical vocabulary rather than a purely literary one.* Many of the books studied in foreign language



classes are gems of the finest literature, and represent the best that has been written in the language. They deal with subjects or topics of weight and importance, and may not come down to the level of the commonplace world in which you spend most of your waking hours. The daily newspaper printed in the foreign language may not be so good from the literary standpoint, but it is more likely to deal with the everyday topics and to impart a more practical vocabulary than the great literary classics of former centuries. For example, a Spanish literary classic is likely to involve the donkey as the mode of transportation, whereas the daily paper will contain advertisements and articles about the automobile. If you wish to put your language to use, supplement the literary study of it by reading the more commonplace and practical types of publications.

*Join language clubs, societies, and associations.* Many language students have found pleasure and profit in language organizations. Although many of the activities may be purely social or recreational, there is much practical good to be gained from learning how to call a meeting to order, how to put a motion, or how to plan a future meeting without resorting to the use of English.

- Assignments:*
1. Report to your classmates the names, addresses, and subscription prices of newspapers and magazines printed in the language which you are studying.
  2. Enumerate the situations that have occurred in the last month in which you wish you had been able to speak a foreign language fluently.
  3. Get a copy of a foreign language newspaper and point out as many differences as you can between the material in it and that in your regular foreign language books.
  4. What is required in order to speak the language outside of school that is not required in order to speak it in your class?

## **6. How to understand the language when others**



**speak it.** To be able to speak a language yourself and to understand it when others speak it are two quite different types of ability. Either may be possessed to a considerable degree without the other. We have dealt with various aspects of the speaking problem in previous sections; we shall now consider the problem of understanding the speech of others.

*Build up a large vocabulary.* Naturally, it is difficult to understand another person when he uses words that are new to you. When you speak you can confine yourself to the words which you already know, but when you listen you have to take what comes to you. If there are very many new words the meaning may be difficult to understand. Everything that was said previously about how to build up a vocabulary is, therefore, partly a solution of the present difficulty.

*Read aloud to associate auditory images with printed words.* Much oral reading tends to build up associations between the sound and the printed symbol so that as you hear a word its printed form will come into your mind. You become accustomed to the sound of your own voice, and are able to recognize words when others speak them.

*Give yourself plenty of listening practice.* Speech which at first "runs all together" becomes intelligible after a bit of listening. You probably have had the experience of being almost unable to understand the words of actors at the theater during the first five minutes and yet of being able to get practically everything that was said before the end of the first act. Listening practice is just as necessary as speaking practice, and just as profitable.

*Ask the person who is talking to speak more slowly.* Almost invariably the speech of a foreigner seems to be too fast, as does English speech to the foreigner who

listens to it. In the early stages of your learning to listen, it is well to ask for the rate to be slowed down. There is, of course, a danger in this if it is continued indefinitely, since you must eventually learn to listen to and understand speech at the normal rate.

*Take dictation.* The simple device of having someone dictate while you write down what you hear, and then having your paper checked to find what you misunderstood, is a genuine aid to the development of listening ability. In taking dictation it is preferable to listen to the sentence as a whole for its general meaning rather than to start writing the first word as soon as you hear it.

*Use the direct method.* With speaking ability, as with listening ability, the direct method is essential. Anyone who studies by the translation method exclusively will have the greatest difficulty in understanding the spoken language, because translation does not proceed at a rate fast enough to keep up with the speaker.

*Try for the thought even though you do not get all the words.* The natural order in the development of ability to understand the spoken tongue is for you first to get a smattering of what is said, then later to be able to understand all but occasional words, and finally to follow the thought entirely. It is too much to hope to get every word at first. If you can tell whether the speaker is pleased or angry at first, you are making progress. This should encourage you to wait and strive for the more perfect understanding which is sure to come.

*Listen to a variety of voices.* Just as no two faces are alike, so no two voices are alike. Many pupils who can understand their teacher perfectly are totally unable to interpret the speech of strangers. Listening ability

should be broadened or generalized so that understanding is possible, whoever the speaker may be.

*Assignments:* 1. Ask someone who has recently learned the English language how he learned to understand spoken English, and report his answer to the class.

2. How much of the difficulty in understanding the spoken language would you attribute to ignorance of vocabulary? To ignorance of grammar? To other sources?

3. Enumerate the different opportunities you have of getting listening practice in the language you are studying.

4. What opportunities for listening practice that are not now available do you think you could with reasonable effort provide?

**7. How to read a foreign language.** It is possible for you to learn to read a language without learning to speak or understand it. Graduate students preparing for the Ph.D. language examinations sometimes concentrate on the development of reading ability only, and in a comparatively short time become quite good silent readers or translators, without learning much about the spoken aspects of the language. The student in school ordinarily does not restrict himself to the reading aim solely, but does devote a considerable part of his efforts to getting the thought from the printed page. The suggestions which follow apply to this reading phase of language study.

*Read extensively rather than intensively.* It is ordinarily better to read twenty pages through for the main ideas than to concentrate on three pages and parse every noun and verb in every sentence. Even if, in your extensive reading, you pass over sentences which you do not fully understand, that is no more than you do every day in reading textbooks or newspapers in English. In your foreign language reading go along rapidly and smoothly, unburdened by the weight of too strict a conscience compelling you to delve into every unusual grammatical

construction. You will enjoy your reading and will develop real reading habits instead of habits of translating, solving grammatical puzzles, and doing linguistic gymnastics. There is a big difference between reading and parsing. Real reading should have a chance to develop, unhampered by the more formal and "thorough" activities for which it is often sacrificed.

*Read very simple and easy material.* The extensive type of reading to which we have just referred would obviously be impossible if the reading matter were very difficult, which it unfortunately is in some instances. The use of very simple and easy material, with plenty of interest and action, helps you to cultivate habits of genuine reading. This is because the thought can be gained without your resorting to the more intensive methods against which we have warned. Ordinarily, your foreign language reading matter may well be several years or school grades lower than you would select for your reading in English. It is far better to practice reading what is below your age or mental level than what is very much above it.

*Avoid the translation habit.* If you ever expect to read well, do not translate. Translation is not reading. You should read French as French, and German as German, without any attempt to translate them into English. You should get the thought directly from the foreign words, in foreign order, and not stop to match them with their English meanings or arrange them into English order. More will be said about this point at a later place in this chapter.

*Avoid the frequent use of the dictionary.* Some students unwisely attempt to "read with their fingers" instead of with their minds, by constantly turning the pages of a dictionary to look up unfamiliar words. There is a

strong temptation to do this at first, particularly if the material is too difficult. But if you strenuously resist the temptation you will soon find that the words which you wanted to look up will be cleared up in later sentences or paragraphs, or that their meanings will come out during a second or third reading of the chapter. Such words as still resist all attempts at understanding after about the third reading may ordinarily be looked up, but there should not be very many of these if the reading matter is wisely chosen. A good way to aid your will power to resist the dictionary temptation is to read books which do not include English-equivalent vocabularies.

*Rely on context for the meanings of new words.* As a substitute for the dictionary you should cultivate the habit of inferring the meaning of a new word from its connection or setting in the sentence as a whole. The first sentence in which it is found may not yield more than a vague idea of its meaning, but each succeeding time it is found, its meaning will be narrowed down and refined until the exact shade of meaning which it carries is finally obvious. Such a method of learning new words will make you a good reader, though not necessarily a good translator.

*Reduce word calling to a minimum.* The superfluous activity of pronouncing words as you read them is a genuine hindrance to rapid and efficient silent reading, whether in English or a foreign tongue. The eye can go much faster than the voice; hence, the rate of reading is slowed down by the process of vocalization. Furthermore, the mental effort and attention required to pronounce the words represents just so much energy taken away from the real reading. If your aim in studying a foreign language is purely and solely to acquire

reading ability, it might be better never to learn how to pronounce the words at all, and never to indulge in any oral practice, in order to prevent word-calling habits from being formed. Ordinarily, however, speaking ability is desired along with reading ability, in which case word calling, while a hindrance to reading, is of value in cultivating speaking ability.

*In the beginning stages read short-unit material.* To begin a novel or long selection which will require weeks for you to finish is unfavorable to the development of reading ability. If the goal is too far away it loses its attraction, and your reading becomes merely an exercise rather than a pleasant pursuit. Short-unit material, with an attainable goal in reach for each day, permits your reading to be done with satisfaction and with a sense of accomplishment, whereas long-unit material may produce discouragement.

*Use long-unit material in the later stages of the development of reading ability.* After you have gained ability to read a foreign language with understanding and pleasure, and after you have reached the stage where you are trying to become a large-scale reader, you should adopt the long-unit type of reading material. Thus, if you start a 300-page novel and finish a chapter half an hour before lunch, the fact that the story is left dangling impels you to go on into the next chapter and utilize the half-hour. On the other hand, if you are reading short units and come to the end of a story a half-hour before lunch you will probably yield to the temptation to put the book away until after noon.

*Read from a variety of different authors and on a variety of subjects.* Each author has his own peculiar style and vocabulary, and after a time you tend to become adjusted to him so that you may prefer to read other works



of his rather than to make the necessary effort to get adjusted to a new author. The mere fact that doing so is in the line of least resistance suggests that it is an unwise thing to do. You should broaden your vocabulary and generalize your reading ability by making contact with many different authors and subjects.

- Assignments:* 1. What parallels can you draw between learning to read a foreign language and your learning to read the English language when you were very young? What contrasts?
2. Draw up a proposed reading plan for a semester to accompany the foreign language course which you are taking.
  3. Compare the values of reading and of speaking a foreign language.
  4. Debate the relative merits of extensive and intensive reading procedures in studying a foreign language.

### **8. How to learn to think in the foreign language.**

One of the most serious "blind alleys" which tempts beginning students of foreign languages and which prevents them from achieving the greatest degree of ability to use the language for practical communication is the translation tendency, or the tendency to think in English rather than the foreign tongue. The method which is opposed to this, usually called the direct method, involves thinking in the foreign language itself and keeping English in a separate mental compartment. The following will help you to apply the direct-method principle in language study.

*Select a direct-method teacher.* If you wish to learn the language so that you can use it readily for communication, and are in a school where several teachers are giving parallel courses in the same language, you may be able to get into a section under a direct-method teacher rather than under one who stresses grammar and translation. Such a choice is not always available to the student, however, in which case there is little to be done except to take the kind of course that is offered and



make the best of the situation by your own individual efforts.

*Learn words by associating them directly with their objects and actions rather than with English equivalents.* This point was discussed earlier in the chapter and needs no further discussion here.

*Proceed rapidly.* Whether reading, listening, or speaking, the higher speed tends to eliminate the translation process; it simply does not allow time for that process to take place. At first this excess speed may simply baffle you and may prevent your getting any meaning at all, but a little later you will begin to adjust yourself to it. Read at the normal English reading rate. Practice listening to speech at the usual rate. When you speak, try to say whatever you can in a consecutive flow rather than in a halting or piece-meal fashion.

*Repeat several times imperfectly instead of resorting to indirect methods.* If you are reading, read over and over several times instead of looking up words. If listening, ask to have the statement repeated, or explained in other foreign words. If speaking, say what you can, using several near-equivalents for the desired word rather than stopping to work your whole sentence out in perfect grammatical form before making an effort to speak. If you keep on "talking around your subject" you will eventually make your ideas clear, and will have saved yourself from the temptation to use English or translation.

*Use a dictionary which defines foreign words by means of other foreign words instead of English.* For each language there are dictionaries similar to our own English dictionaries, in which words are defined by other words in the same language. Such dictionaries may be used with perfect safety, and without fear of counteracting direct-

method instruction, because they do not give English a chance to intrude into the study process.

*Test your comprehension by other means than translation.* Just as oral reading in English was for a long time thought to be the only way to test a child's reading ability, so translation has long been used as the principal test of foreign language comprehension. There are many effective substitutes for it, however, such as answering questions in the language, doing pantomime or gestures to represent what is read or heard, changing the form of the sentences, and telling the story in your own words.

*Assignments:* 1. Prepare a paper in double columns listing the advantages of the direct method on one side and those of the grammar translation method on the other.

2. Tell which of the suggestions given in this section you consider most helpful, and tell why.

3. List the advantages and the disadvantages of learning to speak French by going and living in France.

**9. How to learn foreign grammar.** In times past grammar was stressed more than at present, both in English and in foreign language teaching. But psychologists and students of languages have discovered more recently that one may know the science of a language and still use that language very poorly or inaccurately. It has been found that practical use of a language is the result more of habit formation than of a knowledge of grammar. Consequently, there has been a reduction of emphasis on grammar, particularly in direct-method classes, and a corresponding increase in the amount of drill in actually using the language. There is probably no one, however, who would advocate eliminating all grammar study from the foreign language courses. Such grammar as is studied deserves to be studied well, and by methods that are likely to yield worth-while re-

sults. The points below are presented with that thought in mind.

*Approach grammar inductively.* Learn the specific usages before you learn the rule governing them. Let the formulation of the grammatical rule come after you have had some actual experience with the words or forms which it governs. Learn a number of examples first and then see what they have in common, thus deriving the grammatical rule from the actual examples. In other words, proceed from usage to rule rather than from rule to usage.

*Note the similarities between English and foreign grammar.* The fundamentals of grammar are very much the same in all languages, and if you know English grammar you are very well equipped for the study of a foreign grammar. Someone has said that the best way to learn a foreign grammar is to lay a good foundation in English grammar. Others tell us that one of the values of foreign language study lies in its improvement of our insight into English grammar. Both of these viewpoints indicate that there is a close parallel between English and foreign grammar, and suggest that constant effort should be made to note the similarities which exist.

*Memorize the basic forms thoroughly.* There is much need for genuine drill and memorizing of the specific grammatical forms of a language. There is no known substitute for this drill work. There are no royal roads to the mastery of the basic forms, and yet they need not be pure drudgery. The memorization of paradigms of the *amo-amas-amat* type has often been carried to an unwarranted extreme, sacrificing interest without gaining the ability to use the forms learned. The more re-

cent tendency is to learn these forms in connection with actual sentences in which they would normally appear.

- Assignments:*
1. Tell what values you have derived from your study of English grammar.
  2. Which of these values do you think would be equally great in connection with foreign grammar, and which do you think would not apply?
  3. From such study of foreign grammar as you have made, what would you say about the similarities in and differences between English and foreign grammar?
  4. What similarities in methods of learning do you note in English and foreign grammar?

**10. How to translate.** Translation, like grammar, has been subject to a reduced emphasis during recent years, as a response to the movement for more use of the direct method. Few, if any, of the direct-method advocates, however, would recommend an entire abandonment of translation. It serves several useful purposes. As we have already pointed out, it is a splendid method of enriching English vocabulary. In courses which aim at improvement of English through foreign language study, translation should play a prominent part. Particularly is this true of Latin, since it is richest in indirect values for English and has little value as a means of direct communication. Consequently, the present section will be of special importance to students of Latin, and to students of other languages in classes where the aim is not direct use so much as improvement of English.

*When you translate, do it well.* Some of the careless and slouchy "translation English" which language students turn out would seem to do more harm than good because of the cultivation of incorrect English habits. If translation is to be done at all it should be done well.

*Translate from the foreign languages into English.* This

has been mentioned before as having greater effect on the enrichment of English vocabulary, and needs no further discussion here.

*Read the passage entirely through before beginning to translate.* Too often the first sentence is translated before the second is read, with the result that the spirit of the whole is lost. A thorough reading for the message as a whole will lend unity to the work on the various parts.

*Strive for a free rather than a literal translation.* Sometimes the literal translation of a sentence must be sacrificed in order to bring out the real spirit of it. The good translator is more interested in conveying the original author's message than he is in matching his words with their nearest English equivalents.

*Use the literal translation sometimes as an intermediate step leading to the free translation.* Often a difficult passage or a confused meaning will clear up if you match the words as best you can for a literal translation, after which you may polish the whole and put it into smoother and better form.

*Check your translation after it is completed.* Judging by the number of sentences without subjects or verbs that are found in some students' translations, it would appear that a final check for accuracy is as necessary as is a final check of calculations in mathematics. Not only should the translation be checked for its formal or technical accuracy, but also for its faithful adherence to the message of the original.

*Avoid the dishonest use of "ponies."* Occasionally, students try to "beat the game" by purchasing prepared translations of works which they are studying in school and relying on these as a substitute for their own efforts. Almost invariably they come to grief because, aside from the fact that the use of these artificial aids is dis-

honest and morally degrading, such use does not yield the desired results. There is no substitute for genuine effort and self-activity in education, and the person who tries to dodge the labor of translating by the use of these devices soon finds that he cannot get along even with the aid of the "pony" which he had been employing. Next to the prepared translation, from the moral standpoint, and worse from the standpoint of its usefulness, is the "interlinear" translation in your own book, prepared out of school with the aid of friends or classmates.

- Assignments:*
1. In what ways does translating printed matter differ from understanding oral speech in the language?
  2. How does the method of making a written translation into a foreign language differ from that involved in expressing yourself orally in the language?
  3. What is gained and what is lost by making a careful translation as compared with ordinary reading of the language?
  4. In what ways or under what circumstances do you think that a prepared translation could be of service to you in learning a foreign language?

**11. How to learn foreign idioms.** Every language has numbers of expressions which are peculiarly its own and which are quite different from our ways of expressing the same idea. Thus we say "I am hungry," while in certain other countries the form is, literally, "I have hunger." This is what we call an idiom. If you were to match English words with their literal equivalents and speak to a foreigner you would almost certainly provoke his laughter, or perhaps fail to make yourself understood, because of your failure to use the proper idiomatic forms. Below are a few suggestions on how to learn this aspect of a foreign language.

*Use the same techniques, in general, as you employ in learning ordinary vocabulary.* The fact that an idiom may



consist of several words rather than only one is of no particular importance. It is a thought unit just the same. Idioms may well be the objects of considerable drill just as words are, and may be learned by the same methods.

*Learn idioms through contact with the natives who speak the language.* The more common idioms will ordinarily be learned through books and courses at school, but some of the more subtle qualities of idiomatic expression are best acquired by living and associating daily with those for whom the language is "second nature."

*Make a literal translation of some idioms in order to get the basic meaning, but do not persist in translating them.* To accept idioms blindly and without understanding how such words could possibly carry the thought is of doubtful wisdom; hence the desirability of trying to see the reasonableness or the logic of the expressions. Once this is done, however, it is usually best to accept them at their face value and use them as units rather than to continue to deal with them in dissected form.

*Memorize and drill on the more common idioms.* The more fundamental and more common idioms should be mastered by saying them over and over so that they come to "sound natural" or "feel right on the tongue." If they are left short of this habit stage they are likely to be used improperly or not at all when situations arise to demand them.

*For advanced or thorough work get a printed list of idioms.* Scholars have assembled great collections of idioms for the various languages, so that it is possible to look up the meaning of an expression in very much the same way as you do the meaning of a word in the dictionary. The usefulness and value of such lists of idioms is obvious without further discussion.



- Assignments:* 1. Make a list of ten or more foreign idioms and their English equivalents. Explain why different languages would come to express the same thought in such different ways.
2. Arrange a page in your notebook in which you list new foreign idioms as you encounter them, and after each give the English equivalent.
3. Explain why the literal translations of certain idioms seem so absurd, and justify the apparent absurdity.

**12. How to appreciate the people who speak the foreign language.** One of the aims of foreign language study is social rather than linguistic or literary. It stresses the human aspects of the foreign country. While you are studying a language you are also to some extent studying the people and the country where the language is spoken. Sometimes students and classes fail to get as good results along this social line as should properly come from a course in a foreign language. The following points are offered in the hope that they may aid in the development of a better appreciation of the land and the people where the foreign language originated.

*Read the history and geography of the country.* Just as your study of American history in school helps you to develop patriotism and respect for our institutions, so reading about foreign countries and peoples helps you to appreciate their virtues and their worthy qualities. The *National Geographic Magazine* is a good source of accurate and interesting information about people in other nations, and one which may well be used extensively by foreign language students. The textbooks and supplementary readers used in language classes are often rich in material of a geographical and historical nature, usually presented in the foreign language. Such foreign language materials are ordinarily too meager, or are assimilated too slowly by beginners, to meet the

need completely, and should be supplemented by a certain amount of reading matter in the English language.

*Read the outstanding literary works of the country in English translation.* Every country has its great literary masterpieces which are fully comparable to the best that have been produced in our own language, and which are interesting and instructive for general reading. The best of these have been of such wide appeal that they have been translated into English, and are available to anyone who desires them. While a language student will make contact with some of these in the foreign language itself, he will usually be unable to read more than a few such books at best, and may well supplement these by numbers of others in English translation.

*In the advanced stages of language study, read the literature of the country extensively and in the foreign tongue.* When you get far enough in your reading ability to read and enjoy good books in the language, you will do well to concentrate on foreign works and omit the English translations almost entirely. There is a certain peculiar atmosphere or "flavor" which comes from reading in the foreign language that does not result from reading translations, and this helps you to grasp more fully the real spirit and life of the people about whom you read.

*Subscribe for foreign newspapers or periodicals.* The textbooks and readers which are prepared for language classes may be somewhat removed from the real life of the people, but foreign newspapers and magazines give expression to the actual interests and activities of the day. Almost invariably a language student who gets his first copy of a foreign periodical has some such reaction as: "Those people are very much like ourselves;

they buy toothpaste, patent medicine, and fashionable clothing, and seem to be quite human after all."

*Take advantage of opportunities for foreign travel, and collect souvenirs from the foreign country.* A few pieces of foreign money, postage stamps, articles of dress, or other trinkets known to have come from a foreign country help to make the land and its people seem real and lifelike. Pictures may be obtained from various places to make a scrapbook of the country which is being studied. Steamship companies and travel bureaus can supply interesting material about the attractions to be found in other lands. A few students may be fortunate enough to visit the foreign country itself, and thus learn at first hand about the people whose language has been studied in school.

*Help to decorate the classroom after the spirit of the country.* A few flags, pictures, statues, and souvenirs representing the country may be purchased or contributed by members of the class and thus give a characteristic atmosphere to the room. New decorations may be added from time to time to avoid monotony. Thus the classroom may be a constant reminder of the ideals and aspirations of the people whose language is studied.

*Participate in festivals, pageants, plays, songs, banquets, and programs in celebration of special occasions.* Every nation has its own national holidays, similar to our Fourth of July, Thanksgiving, or Washington's birthday. A celebration of these special occasions by the class not only affords a pleasant diversion but helps to cultivate a fellow feeling. The simple device of joining in group singing of national anthems and other patriotic songs may help to develop an appreciation of the land and its people.

*Join foreign language clubs and societies.* Such activi-

ties as have been mentioned in previous paragraphs ordinarily constitute a prominent element in foreign language clubs and societies. These organizations have a splendid opportunity to develop appreciation of the land and its people, and often do so to a very high degree.

*Engage in correspondence with students who live in the foreign country.* Foreign students are just as interested in the boys and girls of America as you are in them, and are glad to write letters to and receive letters from students in American schools. To engage in such correspondence is an excellent way to come into intimate contact with the real life and pulse of the foreign country.

- Assignments:*
1. Compare the relative values of studying the people and studying the language.
  2. List as many different phases or aspects of the civilization of a foreign nation as you think are suitable to be included in the foreign language course.
  3. What concrete object, souvenir, or ornament could you contribute in order to make your classroom and your course radiate more of the real spirit of the foreign country?
  4. Formulate plans for the kind of foreign language club which would be most successful in your school.

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## CHAPTER IV

### MATHEMATICS

*"The Arabic numerals . . . are one of the most important intellectual possessions of the race . . . The achievements of the industrial revolution would have been utterly impossible without number."*

CHARLES HUBBARD JUDD.

Courses in mathematics, like those in the foreign languages, are generally among the most difficult in the curriculum, and involve a higher percentage of failures and low marks than other subjects. This fact, coupled with the fact that mathematics courses are required of most students, would seem to indicate that any help that may be given on improved methods of studying should be welcome. The present chapter attempts to give such help.

**1. How to improve skill and accuracy in the ordinary number operations.** The simplest and yet the most fundamental aspect of mathematics is the mastery of the ordinary number operations, commonly spoken of as the "four fundamental processes," addition, subtraction, multiplication, and division. These may be considered the foundation upon which all other mathematical achievement rests. Failure here is almost certain to cause failure in the other phases, although mastery of these fundamentals does not guarantee success. The suggestions which follow deal with methods of solving this very important problem.

*Learn the combinations to the automatic or habitual level.*

There must be no need to stop and think whether or not 7 times 8 equals 56. The correct answer must come into the mind immediately and automatically. This fact suggests that the method of learning these combinations should be largely a drill or practice method. You should go over and over these operations, patiently repeating and drilling until you have formed strong and permanent habits of responding correctly for each combination.

*Drill yourself in the operations without the use of pencil and paper.* If you can not add or multiply two small numbers without writing them down, you will be seriously handicapped in many cases where you will not have time or opportunity to work on paper. Written operations are slow and cumbersome, and you need to learn to get along without them when occasion demands.

*Practice combinations in irregular order.* Skip about instead of reciting a multiplication table in fixed order every time. Some students cannot give the sum or product of two numbers without first "taking a running start" by reciting the numbers from one up to that point. It is very necessary that you avoid such a type of learning if you wish to achieve a very high degree of success.

*Strive for accuracy before speed.* You should eventually be able to add a column of figures rapidly, but the best way to work toward that goal is to take your time and gain perfect accuracy before attempting to speed up. Each error you make does much to break up the bond and associations you have formed through laborious practice; hence, it is very unprofitable to take a chance on making errors by resorting to premature bursts of speed.

*Concentrate especially on the more difficult combinations.* Certain numbers may seem to offer no trouble at all

While others seem to be serious stumbling blocks, for no apparent reason. After having learned your fundamentals to a certain point, you need a period of "finishing up the scraps" by giving extra practice to those numbers which offer trouble.

*Assignments:* 1. Take careful note of the next few routine mathematical computations you make and try to discover your weak points.

Arrange a page in your notebook on which to record particular number combinations on which you find you have a tendency to hesitate.

Outline a scheme for number drills which you think will give good results in your class.

**2. How to avoid misreading or misunderstanding the meaning of problems.** An extremely common cause of error in problem solving is carelessness in getting the problem in mind. A number may be written incorrectly. Cost may be mistaken for selling price. Or some similar blunder may be made that spoils everything that comes after it. A few ways of preventing such errors are given here.

*Read each problem at least twice.* Form a regular habit of going back over it, even though you feel quite sure that you got it right the first time. In most cases your second reading will reveal no error, but there will be a small percentage of times when you will detect and correct some serious error. To read each problem a second time is merely a good "safety first" habit, like stopping, looking, and listening before crossing a railroad track.

*Read for the conditions first and get the actual numbers later.* Center attention on the terms or on the principles involved, irrespective of the exact numbers. When you are sure of the meaning of the problem, you are then ready to take note of the numbers and work out the answer. To bring the numbers into the process at first



often causes you to begin juggling figures in a blind or mechanical fashion, which hinders your efforts to reason out the real relationships.

*Read the problem aloud.* When comprehension is difficult, oral reading often helps you to get the meaning better than silent reading. The sound of the sentence as you read it sometimes makes the meaning clear.

*Look up unfamiliar words.* Often the meaning of the problem is completely obscured by a single word. This word may be some special mathematical term, such as "intersecting," or "proportionate;" or it may be the name of an object involved in the problem. An illustration of the latter is the case of a girl who could not figure the weight of a beam of given dimensions because she was acquainted with the word beam only as it applied to a beam of light, or a sunbeam. A few minutes of dictionary work would have removed her difficulty.

*State the problem in your own words.* Its meaning will become clear to you when you react to it. Meaning, after all, depends on what you do or how you react to the words, and your restatement of the problem is a splendid method of interpreting it through your own reactions.

*In difficult cases write down the elements in list or column form.* Record in one column the items that are given and in another the items you will need in finding the answer. This process of itemizing the problem will prove very enlightening. It is in reality a method of grasping the whole by dividing it into parts that are of a convenient size.

*When the problem involves the element of space, draw a diagram of the situation to help you visualize it.* Concreteness is a great aid in getting the meaning. If you draw a picture of the situation step by step as you read

the problem you will usually have at the end a clear and accurate notion of what it is all about.

*Assignments:* 1. Read a problem orally to the class only once and see how many can get the necessary details for solving it without a repetition.

2. What principles are suggested by the above experiment?

3. Check a number of your previous mathematics papers and see what percentage of errors were due to misreading the problem.

4. Select some problem the wording of which seems difficult and re-write it in your own words.

**3. How to learn complicated or difficult mathematical processes.** New mathematical principles, such as factoring, clearing up a quadratic equation, or expanding a binomial, are sometimes difficult to grasp. For many students, progress takes place very nicely after a principle has been learned, but comes to a sudden halt when the next principle is encountered. The following suggestions have been proposed as aids in meeting such situations.

*Master each principle thoroughly as you go.* Oftentimes the difficulty in learning a new principle or process is due chiefly to a faulty or imperfect foundation. Each step is built upon previous steps, and is impossible without them. You may learn a process well enough to solve problems involving it, and still not know it well enough to use it effectively when it enters in as a part of a new and more complex operation.

*Break complex operations up into their elements.* Automobiles are too complex to be manufactured by a single machine, hence they are made in parts and assembled later. Likewise, the more complex and difficult mathematical processes are merely combinations of many elements which in themselves are very simple and easy to understand.

*If possible carry out the process in concrete form.* We

may illustrate this by the case of multiplication, the meaning of which is easily grasped if actual objects are collected and counted the required number of times. The use of the abacus, or wire frame with movable beads, to explain the elementary mathematical processes is very old, but is not justifiable as a means of calculation. This should be done mentally rather than by means of the beads on the wires of the abacus.

*Associate the new process with type problems until you are able to carry it out without such aids.* It is sometimes helpful to rely on a problem that has been worked out in the book, and to solve the first few problems in the practice exercises by thoughtful imitation of the models or type problems given by the author. A purely imitative or routine method is not recommended, however, nor is it suggested that you continue permanently to rely on such a crutch.

*Learn the theory or principle before you begin the manipulation of numbers.* Ordinarily you should demand the reason for the new procedure instead of simply taking it on faith and beginning immediately to juggle numbers in illustrative problems according to the formulas or directions given. Thus you may be able to divide fractions correctly according to the formula "invert the terms of the divisor and multiply," but you should first insist on an explanation of the reason why inverting the terms actually brings about the desired division. Probably a few processes can be learned more economically by rote without the theory, but they are exceptional.

*Get the explanation from a second textbook.* If the text you are studying does not explain quadratics to your entire satisfaction, consult a text written by a different author, whose approach, viewpoint, and illustrations differ from those of the first author. Such a method is

often decidedly better than persistently going over and over the abstract and incomprehensible words of a single textbook.

- Assignments:*
1. Think of some mathematical process which ordinarily gives trouble and explain how you succeeded in mastering it.
  2. Prepare to explain to the class some difficult mathematical process, making your explanation embody sound principles.
  3. Make a list of the mathematical concepts and processes which have never been quite clear to you and review them in the light of the above section.
  4. Which of the principles suggested here do you consider most valuable?

**4. How to solve arithmetic problems.** To a considerable degree the process of solving arithmetic problems is the same as that of all problem solving. The following simple rules, therefore, may be of some value in other subjects besides arithmetic.

*Be sure you understand the problem.* This has been discussed in another place and needs no further comment here.

*Rely on reasoning rather than mere trial and error.* Many students very unwisely try to solve their problems by the random experimentation method. They multiply the first and second numbers and divide by the third. If this does not yield the correct answer they subtract the third, and so on until they happen upon the proper combination of steps. This is not problem solving at all; it is merely gambling, and the chances for success in the end are very small.

*Give conscious attention to your problem-solving technique.* Take time to consider your method of attack. More time spent in planning and less in figuring will ordinarily yield greater returns. The situation here is comparable to that in an army. If the officers who plan the campaigns and decide upon the strategy of the war were to

go into the trenches to fight and leave the planning undone, the war would certainly be lost.

*Avoid the extremes of formal analysis.* Some students learn that it pays to make a careful analysis of the problem as an aid to solving it, and then proceed to make that analysis almost an end in itself. They write out for each problem some such formal statements as the following:

Let  $100\%$  = cost of goods

$10\%$  = profit

$110\%$  = selling price

$110\%$  = \$550

$1\%$  =  $\$550/110$ , or \$5.00

$100\%$  =  $100 \times \$5.00$ , or \$500, the cost of the goods.      --

This may be very desirable in certain cases, particularly when you are learning a new process. It may well be replaced later by such a procedure as  $\$550 \div 110 \times 100 = \$500$ . In this case the necessary reasoning has been done but has not been set down formally and in full on paper. The analysis is necessary, but the formal recitation of it for each problem may be excess baggage.

*Estimate the approximate answer, using round numbers.* The process of estimating an approximate answer puts the major emphasis on thinking, whereas the actual calculation of the exact answer involves considerable routine work of a drill type. This may actually divert attention from the logical elements of the problem. If you think a problem through for an estimated answer you are sure of devoting wholehearted mental effort to it. Afterward you will be in a better position to follow with the necessary routine calculations. These may proceed along the trail that has been blazed by the estimation procedure.

- Assignments:* 1. Solve some fairly difficult arithmetic problem, analyzing your own technique as you go to see where it is faulty.
2. Be prepared to explain to the class any helpful devices you have learned to employ in attacking problems.
3. Interview someone who is very good at solving problems and see how many helpful suggestions you can add to those given in this section.
4. Write out in detail the steps in your solution of a given problem and check those which you think could ordinarily be eliminated from written work.

**5. How to construct algebraic equations.** A common experience of beginning students in algebra is that of being able to solve equations and find the value of  $x$  but not being able to construct equations in the first place from the conditions given in the statement of the problem. Below are a few solutions for this difficulty.

*Study and analyze the problem in much the same way as you would one in arithmetic.* Setting up the equation in algebra is comparable in several ways to determining upon a method of attack in arithmetic. It is primarily a reasoning task. It calls for keen thinking of the highest order. Be sure you grasp the relationships that exist between the various items; then express those relationships by means of letters and numbers, with the aid of such mathematical devices as plus, minus, or division signs. This phase of algebra calls for reasoning or thinking of the very best kind that you can do.

*Find two quantities that are equal and put an equality sign between them.* The equation is at basis a statement of equality, and the items on the two sides of the equality sign must balance. The statement of the problem is usually such that the two parts of your equation are given in one form or another. You may sometimes have trouble in locating them, but should remember always that there are two things in some form or another that



can be taken as equal to each other, and that when you have found these your equation is constructed.

*Generalize your ability to make equations by using different letters at different times.* The principle is the same whether you let the unknown be represented by  $x$ ,  $y$ , or  $q$ . There is no essential difference between having the quantities represented by numbers or by using such letters as  $a$ ,  $b$ ,  $c$ , or  $n$ . The test of your mastery of the art of constructing equations is your ability to make them for problems in which there are no numbers as such and in which all magnitudes are represented by letters.

- Assignments:*
1. Explain why it is more difficult to construct an equation than to solve it after it is constructed.
  2. How does algebra differ from arithmetic, and how does it resemble it?
  3. What are your most serious difficulties in constructing algebraic equations?
  4. Construct the equation for the following problem and describe the mental operations or steps involved in constructing it: "John is twice as old as James, and the sum of their ages is 21 years; how old is each?"

**6. How to learn geometry theorems.** The learning of theorems constitutes a central element in the study of geometry. If this phase of the work is poorly done, a student will fail for want of a suitable foundation. The following suggestions are offered as aids to success in this phase of geometry study.

*Learn by reasoning rather than by memorizing.* Probably the most common and the most serious evil in the study of geometry is that of memorizing the proofs of theorems in a rote fashion without really understanding the logical steps involved. Sometimes the memorizing is done so thoroughly that the proof can be rendered even after the lettering of the figures is changed; yet the real rational understanding of the proof is so com-



etely lacking that the theorem is worthless as an aid to the later solution of original problems. When proofs are difficult there is a temptation to take the short cut and memorize them, but this method invariably turns out to be fruitless in the end.

*Do not pass by theorems unlearned.* Geometry is cumulative, in that each step is based on previous steps and makes use of them. If you miss a few theorems, or slip over them lightly without mastery, you are almost certain to have trouble when you begin to work on later theorems. The situation is comparable to the building of a stone wall, in which a few stones omitted near the bottom will weaken the whole structure above it.

*Remember theorems which you have proved so that you can use them to prove later ones.* There is a place for memory in connection with theorems, as a means of preserving or retaining the results of your reasoning. Each theorem that is learned should be remembered so that it will be available when you need it in working on later ones.

*Learn the meanings of the terms and symbols used.* You cannot reason effectively about concepts or terms which you do not understand. If the term "alternate interior angles" is not perfectly clear to you, all your efforts on this theorem will be in vain. Similarly, the weak spot in another proof may be such a word as "homologous" or "symmetrical." Do not pass over these until you thoroughly understand their meanings.

*Vary the position, shape, and lettering of the figure in order to generalize your ability to prove the theorem.* If your proposition involves a triangular figure, draw it once with an obtuse angle at the right, and then draw a new figure with the angle at the left. Or turn the figure upside down so that the vertex is at the bottom and

the base is at the top. Letter it A B C one time and H J K the next. If you cannot carry out the proof under these varying conditions you have only partially learned it.

*Learn more than one way to prove the proposition.* The proof given in the book may be the simplest and best, but one which you work out for yourself will probably be worth more to you individually. After learning the proof that is given, experiment with others and see if you cannot work out one by a different method, involving the construction of different auxiliary lines in the figure if necessary.

- Assignments:*
1. Go back through your geometry book, note the theorems on which you had trouble, and try to locate the causes of your difficulty in the light of this section.
  2. What advantages and what disadvantages attach to keeping all the proofs of your theorems in a notebook?
  3. List all the advantages that attach to proving a theorem by means of a figure that is drawn in different shapes or positions.
  4. What suggestions can you add to the list of methods given in this section?

**7. How to solve original problems in geometry.** The real test of your mastery of theorems comes when you attempt to solve original problems, because the originals require you to apply your knowledge of theorems. The solution of originals is often considered a very difficult phase of geometry by many students, partly because of its emphasis on reasoning, and partly because most students have not learned how to proceed. Below are a few points which have bearing on this type of work.

*Build a good foundation for originals by mastering the theorems thoroughly.* The theorems are, in a sense, raw material with which to work in building solutions for originals. Your success depends upon the fertility of your suggestions when you are in need of deciding on a

course of action. Your theorems constitute your principal source of these needed suggestions. A workman is more likely to find a way to do a difficult job if he has a complete assortment of building materials than if he has only a few planks and nails. Likewise, you will solve original problems well in proportion to your supply of theorems to use in making your attack.

*Recall related theorems.* You may really know a theorem that would be useful in a given problem and yet not think of it when you need it. When you begin work on a problem, try to stimulate the recall of needed theorems by deliberately searching your mind for cases, figures, or proofs that bear some resemblance to the present one. It may be a similarity of statement, a similarity of shape or figure, or a similarity of some other element, that brings to mind what you need. In any case, you make progress by recalling what you already know and relating it to your present difficulty.

*Attack the problem aggressively rather than by merely waiting for a solution to present itself.* Ideas do not spring into your mind full grown. They are born of strenuous effort, and they grow to maturity with coaxing and cultivation. Simply staring at a figure will not bring a solution. You should attack it vigorously and aggressively, and try some promising course of action even though you are not sure at the outset that it will take you to your goal.

*Draw the figure accurately.* The construction of the figure is often a deciding factor in arriving at a suitable proof or solution. A right angle carelessly drawn so that it looks like an acute angle may deceive you as you search for clues for a proof, and may cause you to dismiss without serious consideration one of your most promising approaches to the problem. While you should ulti-

mately be able to solve the problem with a poorly drawn figure, an accurate one will be of assistance to you in the beginning when every little bit helps.

*Write down steps in the proof so that you can keep them all before you while you work.* Good solutions sometimes go to pieces before they are finished because you forget the first parts before you get to the end. The plan of writing down the steps enables you to retain what you have done while you work on some other phase. Needless to say, if you can get along well without such writing you should not carry along this excess baggage.

- Assignments:*
1. How do original problems differ from the regular theorems?
  2. Make up an original problem of your own which requires geometrical reasoning.
  3. Select some original problem and list all the related theorems that would apply in its solution.
  4. Tell what is your greatest difficulty in solving geometry originals, and ask for help from your classmates.

**8. How to construct geometric figures.** There are several ways in which your work in geometry is influenced by the construction of the figures used in connection with your proofs.

*Get necessary instruments to aid you in making drawings.* The use of a ruler for drawing straight lines, a compass for circles, and possibly a string for drawing circles on the blackboard, will add considerably to the neatness and accuracy of your work. It is ordinarily better to use such mechanical aids than to draw freehand, whether from the standpoint of economy or of the quality of the resulting product.

*Strive for accuracy and neatness.* A neat figure will help you to discover existing relationships, and a carelessly drawn figure may obscure an important one. This has

already been discussed and needs no further elaboration here.

*As a final test of your ability to prove a proposition, draw the figure out of shape or in wrong proportions.* A good test of your genuine mastery of a proof is your ability to carry it out when the figure is distorted or drawn so that its appearance is misleading. There may occasionally be an advantage in drawing an acute angle and assuming that it is a right angle, or in drawing two sides of a triangle decidedly unequal and then proving the proposition on the assumption that the triangle is isosceles.

*Beware of the fancy-work attitude toward the construction of figures.* Occasionally a geometry student reacts toward the drawing of figures in very much the same way as some women react to fine embroidery or other fancy needle work. They try to make their geometric figures look like beautiful works of art, and spend unnecessary time in an effort to add the final touches of artistic perfection. Too often this attention to the physical appearance of the figure is not accompanied by an equal amount of attention to the mental processes that should be involved in the problem. The figure should be a means to an end, and not an end in itself.

*Draw the figure on a large scale so that there is plenty of room to work.* The crowded or cramped figure simply does not offer as much aid to the eye or to the imagination as the comfortably large and roomy one. Paper is cheap and blackboard space is usually plentiful, and there is little justification for crowding or congestion in the drawing of figures.

*Avoid drawing the figure so that it represents a special case.* A proof is sometimes made too easy because a triangle is drawn isosceles instead of with unequal sides, or a

line is drawn perpendicular instead of at a slant. The figure should be drawn to represent the most common or universal conditions, rather than special cases of the types illustrated.

*Draw figures in several shapes or positions in order to generalize your mastery of a given proof.* This point has been discussed before and is mentioned here merely as a reminder and for the sake of completeness.

*In complex figures use colored pencils or different kinds of lines to represent the different phases.* The use of dotted lines for auxiliary purposes is, of course, quite familiar to all geometry students. The use of three or four colors in a given figure carries this common principle a step farther. It is often a very helpful device to aid the mind in visualizing the desired parts and in shutting out from attention the parts that, for the time being, are not needed.

- Assignments:*
1. List all the instruments which you think would improve geometrical drawings and tell the use of each.
  2. Bring as many instruments or handy devices as you can to class and show them to your fellow students.
  3. List all advantages to be gained from drawing accurate geometric figures.
  4. How much of your success in geometry do you attribute to the way in which you draw your figures?

**9. How to make the proper adjustment between memory and thought.** To resort to memorizing in situations which call for reasoning, or to try to reason out matters that should be memorized to the point of automatic functioning, will interfere with your success as a mathematics student. The following are some answers to the question of when to use memory and when to use thought.

*Memorize the fundamental operations but reason out the solutions of problems.* The simple number combinations



should not require thought, because thought is too slow and too likely to result in error. Problems, on the other hand, afford the typical situation for the highest type of reasoning. Number combinations must be automatic; thought can never be.

*Reason in new situations and drill or memorize to perfect the bonds which are thus formed.* When you are confronted by a new process, principle, or type of work, you generally make your first adjustment to it by reasoning or thought. Before you make that adjustment permanent and perfect, however, you may need to continue your repetition, drill, or practice of the operation until it becomes "second nature" to you. Reasoning thus conquers new fields for you, and memory consolidates the gains and advances thus made.

*Reason out the proofs of theorems and memorize their statements.* You should be able to repeat the statement of such a theorem as, "Alternate interior angles between parallel lines are equal," if you are to use this theorem in proving a later one. If the proof of this theorem is understood, it is only fitting and proper to memorize the statement of it. Doing so gives you a "handle" by which to manage the more bulky thoughts which are bound up in the logical proof of the proposition.

*Reason out complex processes or difficult principles in order to be able to remember them.* You retain better what you understand than what is mere meaningless jargon. A definition or rule which you memorize by rote is very difficult to retain because you have only the physical without the mental basis for retention. Reasoning makes retention easier.

*Assignments:* 1. Recall some particular student who tried to memorize his way through geometry and describe the nature of the resulting difficulties.



2. What is there in geometry to memorize besides proofs?
3. Go through your book and pick out the theorems which you need most often and which you consider worth memorizing.
4. Analyze the proof of some particular theorem and point out the memory elements that were involved in that proof.

**10. How to avoid or remedy the misfortune of getting behind the class.** The fact that one day's work in mathematics depends for its success upon the mastery of previous days' lessons to a greater extent than is the case with most school subjects, suggests that getting behind the class in this subject is a very serious matter. When it does occur for some unavoidable reason you should make every effort possible to catch up quickly and completely. Being behind actually increases your handicap, and the farther you get behind the more difficult it is for you to gain on the class in your effort to close up the gap which separates you. The following suggestions bear on this problem.

*Do each day's work well and on time.* Merely being aware of the unusual seriousness of tardy work in mathematics should go far to strengthen your will and help you to keep up with the class. A firm resolution and a regular habit of having all work well done and on time will prove your surest guarantee of success as a mathematics student.

*Work ahead and thus be protected against emergencies.* Illness and accidents are sure to befall a certain number of persons in any group. Fire and life insurance companies know beforehand that a certain percentage of policies will fall due each year. Likewise, you can safely predict that at some time or another you are going to face special circumstances and be unable to prepare your lessons. A little work ahead may be quite valu-

able in such cases, just as an insurance policy is valuable in case of a fire.

*Do not hope to build over a gap or faulty spot in your preparation.* If you have missed something, or gone over something without understanding it, rest assured that the deficiency will not be forgotten, and that it will certainly show up to plague you later. You may get along fairly well for a short time, but eventually the increasing weight of the new structure will cause the weak spot to give way and you will face a genuine catastrophe.

*Do not let one unusually difficult problem rob you of your available time or cause you to neglect the rest of the lesson.* Occasionally you will "strike a snag," be unable to make progress, and be tempted to give the whole study period to the effort to "solve that problem or die in the attempt." This is a splendid moral attitude to take, but it may be carried to extremes and may work injury to your real success. If the difficult problem is put aside after a reasonable time, while you work the other ones in the lesson, you may come back to it later and solve it with less difficulty, or study on it as long as you have time. Such a problem is often extremely easy after you have worked the other problems, or after a period has elapsed during which you have been able to acquire a fresh viewpoint toward it.

*Keep up with the class while making up back work.* Just as one problem may rob you of time needed on all the others, so your efforts to make up back work may be carried to such an extreme that you get even farther behind than before. It is often better to concentrate on the regular work of the class and make sure that nothing else slips by to be added to the accumulation of back work. Then you can give such time as possible to re-

pairing the gaps that are most serious while you go ahead with the class.

*In making up work abbreviate or abridge the part of the course that was missed if necessary.* After a period of illness you may have missed so much that it is not humanly possible to make it all up perfectly. Something must be sacrificed or all will be lost. In such cases pick out the most essential items, or have your teacher select them for you, and let the minor details or less important matters wait. It is sometimes preferable to finish a course by such a method, even with a low mark, rather than to sacrifice the entire course by insisting on doing everything that was done by the regular class.

*Arrange for special help by the teacher, a classmate, or a private tutor.* A person who is "down" may be able to stand, once he has regained his feet, yet be unable to get up without assistance. This is true in mathematical as well as in physical situations. Sometimes the necessary help can be obtained through the kindness of a teacher or personal friend. But even if you have to pay for it you can often afford to do so. A semester hour of credit is financially worth many dollars to you, whether considered from the viewpoint of what you actually spend in going to school or what you could earn during that time if not in school.

- Assignments:*
1. Recall some instance when you were behind with your work and tell how you made it up.
  2. Describe to the class some case where a fellow student attempted to make up back work by unwise methods and point out the nature of his error.
  3. What in particular would you do if at the present time you were two weeks behind in mathematics?
  4. Give as many reasons as you can to explain why students should never get behind with their work in mathematics if they can possibly avoid it.

## **11. How to make effective use of short methods of**

**work.** There are many short cuts for rapid calculation or for the saving of labor in mathematical work, some of which are exceedingly useful. For example, there is the slide rule, by means of which you can multiply, divide, extract square and cube roots, etc., with amazing speed. Likewise, there are many useful tricks for mental arithmetic. One is that of multiplying a number by 25 by the method of adding two ciphers and dividing by 4. The following suggestions relate to the use of all such short methods in mathematical work.

*Learn the long method first.* As a general rule, it is difficult to get the greatest service from the short method unless you first understand and know how to use the standard procedure. A person who cannot write long-hand will not do well at shorthand, nor can one who is poor at single column addition better himself appreciably by attempting double column addition. The short method ordinarily places a little more burden on the mind, involving somewhat more reasoning or more ability to deal with abstractions than is required by the long method. The latter will probably break down if you are not fully prepared for it by thoroughly understanding the regular procedure of which it is an abbreviation.

*Do not let the short method rob you of your ability to use the standard one.* Even though you can divide more rapidly by means of a slide rule than by long division, you should still keep up your skill in long division. You may not always have a slide rule at hand, or you may have to do a problem which requires more decimals than the slide rule will give you. The use of a crutch becomes an evil if it tempts you to forget how to walk without it.

*Learn how the short method works, or get the theory on*

*which it is based.* The device of multiplying a number by 25 through adding two ciphers and dividing by 4 is perfectly valid because the two ciphers involve multiplying by 100, and then dividing by 4 reduces the result to one-fourth, as if 25 had been the original multiplier. Similarly each short cut should be understood so that it involves more than blind or mechanical juggling.

*Learn it so well that your accuracy in using it is high.* At first your results by a short method are likely to be less accurate than those by the standard procedure. In fact, the short method may require a longer time at first than is required by the regular method. A person who is just learning to use a slide rule or a computing machine is likely to be quite slow and inaccurate for a considerable time. A period of diligent practice, however, will eventually bring greater speed and accuracy than could possibly be obtained by the ordinary methods of work.

*Avoid elaborate short cuts which in reality involve false economy.* There are limits beyond which it does not pay to go in the use of short methods. They may become so abstract that they involve a high degree of risk of accuracy, or they may not shorten the work as much as they increase its mental difficulty. There is such a thing as doing too much work in the effort to get out of work.

- Assignments:*
1. List as many short methods in your work as you can and illustrate each.
  2. Do an actual experiment in which you compare the time required for short and long methods and also the accuracy or efficiency of each.
  3. From your observation and experience tell what dangers attach to the use of short methods.
  4. Report to class any useful short method of work that you think will be new to the other members.

**12. How to check or verify work.** Since all mathe-

mathematical work is subject to error and inaccuracy, and since an incorrect answer is usually worse than no answer at all, there is need for the utmost care in checking and verifying work to be sure that it is correct. The following are some methods:

*See if the results satisfy the original conditions stated in the problem.* A little time spent in comparing the answer with the original problem will be fruitful in revealing whether there has been any gross error. It will help you to detect many of the foolish or absurd blunders that occur in the work of even the best mathematicians.

*Use the substitution method to check up on the solution of algebraic equations.* After you have found the value of  $x$ , you can test your work simply by substituting this value in the equation and noting whether the equation is satisfied. This, of course, will not tell you whether the equation was originally correct or not, but that can be checked by the procedure mentioned in the preceding paragraph.

*Reverse the order of operations and see if you can get the same results.* If you wish to check your subtraction, do so by addition; or to check multiplication, divide. Such devices are familiar to most students, but are often neglected at times when they should be used.

*Work by a different method.* To check your addition of a column of figures, add upward one time and downward the next. You are not likely to make the same blunders each time. If there is a series of multiplications and divisions, do them in different order the second time and see if you get the same answer as before. You may check decimal fraction work by the use of common fractions, or check work done with yards as a unit of measure by reducing yards to feet. There is danger of making the same mistake over and over if you repeat the



work by the same method, while a change of method enables you to escape many of the original blunders.

*Check long methods of work by means of short methods.* The slide rule is a good checking device to use when you desire to discover any major error in work done by the long method. Even in situations where the short methods are for any reason questionable as the basis for the original calculation, they are often highly useful as checking devices.

*Check for major errors by means of estimates and approximations.* If you treat such a number as 89 as if it were 100, and consider 1192 as 1000, you can check the accuracy of  $89 \times 1192$  by saying at once that it should be somewhere around 100,000. The true answer is 106,088. If you made some ridiculous blunder and got 963,328, which could easily happen by setting your second partial product two places to the left instead of one, your estimated answer would tell you at once that something was wrong. Similar illustrations could be given endlessly.

*Study your answer for its logical reasonableness.* Ask yourself whether such an answer is possible. Check the detailed calculations by comparison with the very general and sweeping results of your use of reasoning or common sense.

*Let a period intervene so that you can approach the work with a fresh viewpoint.* The same advantage that comes from leaving a theme which you have written for a few hours or days before revising it applies to your letting a period intervene between working a problem and checking its accuracy. In problems in which you have an error but cannot locate it, getting a good night's sleep may be the best way to locate the source of the trouble.



*In troublesome cases start over instead of trying to find the error and correct your present work.* In going over your incorrect work you are likely to follow the same mental tracks you traversed the first time. Thus you pass over your error many times without seeing it. If you erase and begin at the beginning you may make more rapid progress.

- Assignments:*
1. List all the reasons or arguments you can in favor of checking your work and support them by concrete cases.
  2. Which of the suggestions given in this section do you think are most helpful?
  3. How many of them did you already know and practice before you read the section?
  4. What methods can you add for checking the work in specific situations or phases of mathematics?

**13. How to cause your mathematics to function outside the classroom.** A common complaint from the practical business man is that school and college graduates are unable to apply in life situations the knowledge which they are known to have gained in school. This is a particularly common complaint regarding mathematics. Some remedies are mentioned below.

*Master it thoroughly so that you can see its applications more clearly.* If you know a process just well enough to perform it haltingly, you will naturally be unable to use it freely as a practical tool. If you are a master of it you can turn your attention to what you are to do with it instead of having to give your whole attention to its mere manipulation.

*Study applied as well as pure mathematics.* If you give attention to applications as you study you are more likely to discover applications that come up later in new situations.

*Get acquainted with the practical world in which mathematics is being based.* If you are intimately acquainted with

the world of business and industry you will be more able to use your mathematics than if you are ignorant of these things. Much of the failure of mathematics to function in the world of practical affairs is not due to ignorance of mathematics so much as to ignorance of practical affairs.

- Assignments:* 1. List as many cases and conditions as you can in which mathematics is useful.
2. Recount instances or experiences in which your mathematics failed to function, and explain why.
  3. What parts or phases of mathematics have you found to have the most frequent application?
  4. Go through several pages of your text in mathematics and find at least one use or application for each process learned.

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## CHAPTER V

### PHYSICS AND CHEMISTRY

*"The future of our civilization depends on the widening spread and deepening hold of the scientific habit of mind."*

JOHN DEWEY.

This chapter and the next one both deal with the study of the sciences. This one is concerned with the physical and the next with the biological sciences. Some of the more general problems of science study which apply to all sciences are included in this chapter and not repeated in the next. The fact that the industrial age in which we live is to such a large extent a result of advancement in science suggests that there is great need for everyone to acquaint himself with scientific principles in order to understand and appreciate the events and phenomena of everyday life. If the suggestions in this chapter make science study easier or more effective they will have rendered a useful service.

#### **1. How to acquire the scientific spirit or attitude.**

In a sense the development of the scientific attitude is a major aim in all education, but it is particularly an aim in the study of natural science. The following are a few methods of accomplishing this objective.

*Read the lives of the great scientists and the stories of their major discoveries.* The history of science is rich in materials that will increase your appreciation of the spirit that dominates the quest for truth. The patient experimentation of great scholars who labored for no

reward except that of discovering truth should serve as an example and an inspiration to us all.

*Devote attention to scientific techniques as well as to scientific facts.* A great scientific discovery may be as important because of the method by which it was made as because of the new truth revealed. Oftentimes a scientist's contribution lies more in his development of new methods of investigation than in his actual use of those methods himself. Having a great zeal for science is not sufficient unless you have intelligent mastery of scientific method, or research technique, by means of which you can attack problems that confront you. Even if you do not engage in research yourself, an understanding and appreciation of scientific method will be of infinite value in aiding you to profit by the works of others.

*Do some scientific research or investigation of your own.* Research is valuable even though it is done on a very small scale. The problems involved in the work of the scientist are much more real and vivid to you when you face them directly than when you make contact with them at long range, or second-hand. The satisfaction that comes from arriving at the solution of an original problem is very real and genuine, and makes you want to continue in the role of an investigator or scientist. The scientists who have become so absorbed in their research projects that they have forgotten their dinners or their weddings have not been cranks or misfits. You may reach the same degree of interest in the search for truth if you are once initiated!

- Assignments:* 1. Make a list of your own scientific interests or activities and compare with them those of other students.
2. On a selected page in your notebook jot down every scientific phenomenon or every scientific question that attracts your curiosity for the period of one week.

3. What specific satisfactions in modern life can you ascribe purely and solely to science?
4. Name all the great scientists you can and mention the outstanding contributions of each.

**2. How to understand scientific language or terminology.** The sciences are noted for their many strange and unfamiliar technical terms. The beginner is often faced with a serious difficulty in knowing what is meant by some scientific reading matter. The suggestions below are intended to remedy this difficulty to some extent.

*Employ the same methods as you would in learning a foreign language.* A large number of the scientific words which offer difficulty are borrowed directly from Latin or Greek, or are made up of a combination of two or more foreign words. The same techniques that yield a mastery of foreign vocabulary should, therefore, yield a mastery of scientific terms.

*Get a rich experience with the phenomenon for which a word stands.* Words are abbreviations of experiences, and are often difficult to grasp if you do not have the appropriate background of related experiences. If you are a close and alert observer of scientific phenomena, you will soon acquire the necessary fund of experiences to interpret scientific words when you meet them. Many of these experiences can be gained indirectly through reading. Not infrequently a term which is meaningless the first time you see it will be clear by the time you reach the end of the paragraph or chapter.

*Beware of letting too many unfamiliar terms accumulate.* If you pass by too many technical terms without learning them, you soon find that you cannot understand the later material. To a large extent each new concept is explained in terms of previous ones; if you fail to get a

number of the basic concepts you are poorly prepared to read more advanced chapters or books.

*Distinguish between popular and scientific uses of terms.* The ordinary citizen uses many words in a loose way which a scientist would not tolerate at all because of the inaccuracy or inexactness of such usage. Many age-old terms have had to be redefined so that when they are used the reader might get the same meaning as the author had when he wrote them. An ever-present danger in scientific study is that of confusing popular with scientific meanings of terms.

*Make regular use of dictionaries and glossaries of scientific terms.* The more important new terms are usually explained and illustrated by textbook authors when they are first introduced. But even so they are often forgotten by students and cannot be readily looked up except by means of an alphabetical list especially prepared for the purpose. In no other subject will you find greater use for your dictionary than in the course in science.

*In some cases look up the foreign roots of the words.* The word "telescope" is clear in meaning when you realize that "tele" means "far" and "scope" means see. Thus the instrument is a "far seer." Having learned this, you already have half the explanation of the new word "microscope," and have only to learn that "micro" means small. This word, in turn helps to explain the meaning of the word "micrometer," which turns out to be a "small measurer," or an instrument for measuring extremely small units of space, such as thousandths of an inch. This study of foreign derivations may be overdone, of course. In the case of many words it may be a roundabout approach, as compared with the direct ex-

planation of their meaning, but it is unquestionably valuable in numerous cases.

- Assignments:*
1. Prepare a page in your notebook in which to list the new scientific terms which you wish to master.
  2. What reference book or scientific dictionary can you recommend as being unusually good for looking up scientific words?
  3. Mention a number of words whose scientific meanings differ sharply from their popular meanings.
  4. What devices have you found unusually helpful in addition to those mentioned in this section?

**3. How to understand abstract scientific principles or theories.** Merely understanding every word in a paragraph does not guarantee an understanding of the paragraph. Statements of scientific theories, principles, and laws are sometimes difficult to grasp, even though the individual words are perfectly clear and simple. You may be able very glibly to recite the words of Newton's laws of motion, or the law of universal gravitation, and yet not know very well what these principles mean. Some aids to the understanding of such ideas are given here.

*Recognize principles and theories as important phases of science.* Give them due emphasis and attention. The more general and abstract a statement of truth is, the more difficult it is to understand. But this very generality implies universality of application, and hence special importance as an object of study. If you master the basic principles, all else is simply application of these. The principles are, in a sense, the master keys to all science, and are to be studied thoroughly despite their abstractness and difficulty.

*Get a rich fund of concrete experience to help you interpret abstractions.* Concreteness is the key to the understanding of the abstract. If you can succeed in relating abstract statements to particular cases which illustrate



them, their meaning is perfectly clear. If you are already familiar with the more common scientific objects and phenomena of nature when you study an abstract topic, the principles which you learn will simply be summarizations or interpretations of experiences already gained. They will no longer be strange or abstract.

*Do your part to follow explanations given by the text and the teacher.* One of the major aims of teachers and texts is to explain the difficult concepts and principles of science. Yet the teacher and the text cannot do the task without your help. If you fail to ask when you need special help, or fail to take advantage of the help that is given, you will naturally fail to progress. Learning, whatever its kind, takes place through your own efforts.

*Solve problems to test your mastery of the principles underlying them.* You may feel that you understand a new principle thoroughly, yet realize when you try to use it that there are several hazy or vague elements involved in your grasp of it. Problems are splendid means of discovering your shortcomings; they stimulate the additional study needed to repair the gaps in your knowledge.

*Make laboratory applications of principles.* Laboratory exercises aid in the mastery of abstract principles in two ways. They supply the concrete element so often needed for a clear grasp of the theory; and they also furnish the problem element by which to test your ability to apply what you have learned.

*Vigorously resist the temptation to memorize empty or meaningless words.* If you cannot learn the laws of motion understandingly, you should not stoop to the cheap substitute of memorizing the words. It is better to come to class unprepared than to come with a sham type of preparation which deceives you and your teacher and

prevents your getting the necessary special help and attention.

- Assignments:*
1. Explain how learning a principle or concept differs from learning a scientific word.
  2. List the specific concepts, principles, or laws which have given you most trouble in your science study.
  3. What advantages and what dangers lie in memorizing a scientific law?
  4. What specific methods do you find most helpful in learning a new scientific theory?

**4. How to correlate text and class study with laboratory work.** Whether to precede or to follow the laboratory work by textbook study and class discussion is a question of importance confronting both student and teacher. How to make each type of work serve the other in maximum degree is the subject of this division of our chapter.

*Get every concrete experience you can, whether in the laboratory or outside.* This is an aid to your textbook study. Everything you do is laboratory work, in a sense, because it adds to your background of experience and to your understanding of phenomena. You should, therefore, maintain a laboratory state of mind at all times. Be constantly alert, observing, and inquisitive; seek to learn and know everything that is to be revealed in your day's activities. This attitude helps tremendously to make textbook or class work rich and meaningful.

*Prepare for laboratory exercises by studying about them in the textbook.* Learn what you can beforehand from reading. Then when you reach the laboratory you will be prepared to see more and understand more than you could otherwise. To prepare for a laboratory lesson by previous study is comparable to reading beforehand about the attractions in a strange city or a foreign country instead of just going there to look around in a

haphazard fashion. The most interesting sights are visible only to the travelers who know how and where to look for them.

*Do laboratory work to gain new insight rather than as a means of merely meeting a requirement.* It is not nearly so important that your exercise turn out right as it is that you get a new idea about scientific principles or laws. An exercise which fails of the desired result may conceivably be more valuable than one which is successful, provided that it directs your attention to the inner workings of scientific forces. When you do laboratory work, therefore, you should be just as much a student of theories and principles as when you are reading the theory presented in the text.

*Search through the text to find theoretical material to explain laboratory exercises.* When you do laboratory work you should treat your books as reference works to which you can go for what you need. All your printed materials may well be organized, for the time being, around the practical laboratory activities. A single exercise may necessitate your consulting several different chapters in the textbook and bringing together topics which the textbook author treats separately. The laboratory is like life outside of school in this respect, in that it calls for ability to re-combine and reorganize your knowledge.

*Study the textbook after doing the laboratory work.* This will help you to capitalize upon the experience gained in the laboratory. A chapter which means little to you before you do a related laboratory exercise may be fairly bursting with new significance afterward, just as a picture of some beautiful lake or mountain takes on new significance after you have once visited the national park in which it is located. We may summarize the

point of this whole section by saying that laboratory work and textbook study should proceed as a unity; keep each in mind when you study the other. Go back and forth from one to the other to keep them intimately related.

*Assignments:* 1. In double columns list the advantages and the disadvantages of having textbook study precede laboratory work.

2. What specific preparation do you usually make for a laboratory period?

3. Go through your textbook and locate all related matter you can that would help you in doing a particular laboratory experiment.

4. What reference books do you know of that would be particularly good to use in connection with laboratory work?

**5. How to apply scientific knowledge outside of the classroom or laboratory.** The main difference between pure and applied science lies in the extent to which connections with practical situations and problems are established. The following suggestions relate to methods of establishing such connections.

*Seek scientific explanations of practical problems instead of practical applications of scientific facts.* If you proceed from practice to science you work in a much more functional way than when you proceed from science to practice. You have a valuable use for every scientific fact learned. If you are trying to explain the reason why freezing bursts water pipes the science has a bearing on a problem of some importance. On the other hand, if you were trying to "apply" the fact that "heat expands, cold contracts," you might not think of a practical application that would have significance. You should, at least as a finishing process, take up a number of practical questions of the day and seek their scientific explanations, in order to bring out the connections between pure science and the world in which you live.

*Read popular periodicals of a scientific nature.* The aver-

age student will profit by reading magazines with such titles as "Popular Science," in which there are numerous articles, pictures, and diagrams dealing with projects of a semi-scientific and extremely practical nature. Such reading will serve as a splendid corrective or supplement to the too theoretical study of science as it is often carried on in school.

*Have your own shop or laboratory and be a tinkerer.* If you wish to make a toy windmill, a model airplane, or a new radio set, you could hardly engage in a more worth-while recreation. The more you tinker with mechanical things, the more you will learn about the laws and forces of nature. It is said that Thomas A. Edison's career as a practical scientist began in a home-made laboratory where as a boy he tinkered with a few chemicals and pieces of electrical apparatus.

- Assignments:*
1. What phenomena from your everyday life would you like to have explained in scientific terms?
  2. Make a list of everyday experiences which have more meaning to you as a result of your scientific knowledge.
  3. Select at random six objects in the room and think of some important scientific fact or principle that is suggested by each.
  4. Give as many explanations as you can for the failure of science to relate to everyday life any better than it does.

**6. How to observe and interpret scientific phenomena.** The art of observation is capable of development to a very high degree. The American Indians are said to have been extremely skillful in observing the tracks of game or in following a trail through the forest by the aid of marks or signs almost beyond the notice of the untrained white man. This ability to observe was purely a matter of training, or of learning how to look for the significant marks. It may be developed in connection with any type of situation, including scientific observation, by such methods as those suggested below.

*Make a preliminary study of what you are going to observe.* You see more if you know what to look for. Reading enables you to direct your attention to the important elements and to avoid wasting time on non-essentials. If you make a preliminary list of the items for which you are to look, you will come away with a great deal more insight than if you went unprepared and "just looked."

*Analyze the whole into parts or elements and observe one at a time.* Analysis enables you to cover the whole more thoroughly and also to concentrate more intensively on any one part while you are concerned with it. Scientific judges of fine poultry, livestock, or farm products have discovered that by the use of an analytical score-card they can make very accurate and complete observations. In fact, two or more judges will yield almost exactly the same ratings. Such precision of observation does not result when judgments are made "in general," or without analysis.

*Look for relationships.* Merely seeing all the elements in an object or phenomenon is of small value unless you look for their relationships. One observer may watch the daily paper go through the printing press and come away with mental images of a mass of wheels, rollers, and rapidly moving paper. A more careful observer will note the relationships of the various parts to the whole and to each other, and will be able to tell you how the paper is printed. Facts and mental images are valuable, but their value is multiplied many times when you discover how they are related.

*Seek the causes back of what you see.* If you are watching a machine wrap loaves of bread and note that the wrapped loaves are passed between heated metal plates, you have only begun your observation. If you ask



why, or observe with a view to learning why, you learn that the heat melts the wax on the paper wrapper, sealing the loaves airtight in order to prevent their drying out and becoming stale. Similarly, phenomena that can be *seen* in a few minutes may be studied with profit for an hour if you insist on learning the causes back of them.

*Compare several specimens of a kind.* If you observe one automobile factory you learn many interesting things about the industry and its scientific problems. But if you visit the plants of several and observe the manufacture not only of Fords but also of Chevrolets, Nashes, Lincolns, and Packards, the similarities and contrasts between them will bring to your attention elements which would have escaped you entirely if you had seen only one factory.

*Use instruments to aid you.* The invention of the microscope, telescope, and thermometer has contributed enormously to our ability to observe scientific phenomena. The importance of using such devices hardly needs comment here. The important point to note is that there are many more specialized instruments for making scientific observations than the average person realizes. One of the aims of science study is to find out about the available instruments and how to use them.

*Draw what you see.* Visual observation is improved by drawing. The effort to draw motivates more careful scrutiny of the object; the drawing itself serves to strengthen or deepen the mental image of what you have seen. A few efforts to draw what is before you will convince you that there are many occasions when you "see but do not perceive," and that there is room for much improvement.

*Make written records of your observations.* Making notes about what you see serves somewhat the same



purpose as drawing; and it can be applied to many things which do not readily lend themselves to drawing. Experimental studies have shown that observations accompanied by note-taking yielded richer returns than those without the making of such records.

*Compare your observations with those of other persons.* No two persons who witness a given phenomenon will come away with exactly the same impressions. Contradictory testimony is frequently given in court regarding traffic accidents or similar matters, even when the witnesses are perfectly honest and doing their best to tell exactly what they saw. Two observers will see more than one, and see the same things in different ways. A comparison of their observations will be enlightening to each. It will also provide an occasion for further observation of points concerning which impressions differed.

*Assignments:* 1. List all the advantages you can of being a good observer.

2. Have one member of your class present some fairly complicated article for all to observe for a limited time, after which each member of the class will list all the facts or details he can remember about it. Compare the results of different pupils.
3. Take any two chairs, books, pencils, or other objects and see how many different ways you can find in which they differ.
4. Check the accuracy of your observation of some object or process by comparing with another person's recollection of it and then going back to the original for verification.

**7. How to benefit from demonstrations given by the teacher.** The demonstration method of teaching is used a great deal in the laboratory sciences in place of the usual laboratory work done by the student himself. In order to get the most out of the demonstration, however, you need to develop a technique for observing. The suggestions which follow will help you in this phase of science work.

*Try for the principles rather than for skill.* The reason

the demonstration is used instead of the individual laboratory is that it is very effective for the presentation of fundamental principles. In fact, it is as good as the individual laboratory in practically every respect except in the element of skill. If the teacher's aim is for you to develop actual skill in the use of apparatus, he will attempt to do this through the individual laboratory rather than through demonstration. As you watch the teacher perform an experiment, try to understand what it signifies, rather than how to perform it yourself. The chances are that you will never have to perform that experiment, anyway. There are many times during the science course, however, when you will need to know what it shows, or what it proves.

*Be active as a participant even though you are only observing.* The demonstration is not as active a method for you as a student as is the individual laboratory, and there is a possibility of your lapsing into a state of indifference or neglect comparable to that which sometimes prevails during a lecture. Your attitude during a demonstration should be active rather than passive. You should assume responsibility for getting what the demonstration has to offer, rather than place that responsibility on the teacher.

*Study about the topic before the demonstration period.* Familiarize yourself with the topic in advance, so that listening is easy. Read the parts of the textbook which discuss the phenomena to be demonstrated, and get as much background as you can. In this way you will be better prepared to interpret what you see.

*Ask about points that are not clear.* As a general rule a science demonstration is carried on in an informal way. Usually there is no reason why, if you do not understand something, you should not make that fact known and get an explanation of the points that are

causing trouble. In some demonstrations, however, the nature of the experiment is such that it is not well to interrupt while the work is going on. In such cases you should make mental or written notes of your questions and take them up as soon as time permits.

*Take notes and make a written report of the demonstrations.* Note-taking is as useful in connection with demonstrations as in connection with other types of observation lessons. You should jot down the important points in order to keep a record of them for later study, and to impress them more firmly upon your mind. Investigations have been made which show that a demonstration accompanied by note-taking will yield more knowledge than a demonstration without the note-taking.

*Assignments:* 1. How does observation in the laboratory or in the demonstration room differ from observation outside of school?

2. In what specific ways is the demonstration preferable to the lecture?

3. Compare the values derived from seeing several experiments demonstrated with those derived from actually doing one yourself.

4. Think of some scientific demonstration you have recently seen and mention the strong or weak points in the students' procedure while the demonstration was in progress.

**8. How to acquire skill in the use of apparatus and in the doing of laboratory work.** If you expect to specialize in the field of science, you should concentrate your attention upon the quality of your laboratory work. You should attempt to become as skillful as you possibly can in the performance of actual experiments. The industrial world offers abundant opportunities for scientific specialists who are skillful in laboratory activities. In addition to these vocational outcomes of good laboratory technique, there are numerous advantages to be derived from being a good laboratory worker even while taking the science course in school.

*Concentrate upon technique as an important essential if*

*you are going to be a science specialist.* If you expect to major in chemistry, or to be a chemical engineer, or to work as an industrial chemist, your laboratory work is an apprenticeship in the calling you will follow later. You must not only know the theory of chemistry but be able to apply it in the laboratory where knowledge and skill are both essential.

*Make a special study of the tricks and devices for the particular laboratory in which you are working.* The laboratory in each different science calls for its own special types of skills. It is safe to say that there are tricks in all laboratory trades. Such operations as bending a piece of glass tubing, or heating a solution in a test tube without breaking it, may seem unimportant at first; but when numbers of these little things are added together, they make up the difference between a good and poor laboratory technician. Likewise, precautions must be taken in handling dangerous apparatus or dangerous chemicals.

*Imitate the teacher's examples as seen in demonstration.* Watch the teacher and see how he works; then employ a similar technique when you do your own exercises. The imitation of a good model is a valuable aid in acquiring skill in this form of work. Sometimes it may be well to get the laboratory assistant to demonstrate the use of new equipment for you, particularly if this has not been done as a class demonstration.

*Work with understanding, and do not merely follow directions.* Laboratory work should be more than merely following recipes or performing routine directions as written out in a book. Your manual will ordinarily give the essential steps or elements in your work, and should provide enough guidance for you to work independently. The responsibility is upon you, however, to know what

is to be done and why it is to be done that way. If your laboratory work is merely blind juggling or routine manipulation without any reason or background for it, you should change your methods of study. Come into the laboratory with a different mental state and go out of it with a different type of result.

*Do the same experiment a second time in order to perfect your technique.* Occasionally your first work with a piece of apparatus may be only sufficient to teach you how to use it. In that case it may be especially advantageous for you to do the experiment again after you have learned how. Thus you perfect the skill and crystallize the bonds which were only partly formed the first time. A few repetitions will make a skillful technician out of you when the failure to repeat would leave you only a crude worker.

*Learn how to work rapidly.* Slow work in the laboratory is of doubtful value. It may yield more accurate results and may give you time to think through things which you would not accomplish well at the higher speed, but if slow work continues in exercise after exercise you are likely to become an habitually slow worker. It is not our intention to advocate slovenliness or inaccuracy, but rather to insist that in addition to accuracy and precision you should strive for speed. Take your time and do the work right at first while you are merely learning, but also keep in mind that if you ever expect to be an expert in the laboratory you must have speed in addition to accuracy. A vocational chemist who is accurate but never gets very much done is in danger of losing his job and of being replaced by someone who can turn out more work.

*Keep idle apparatus cleared away.* Nothing interferes with effective laboratory work quite so much as the

presence of vessels, pans, and pieces of material lying around which serve no purpose in the particular work that is going on. A good rule is to "keep the decks clear" and keep material and apparatus out of the way while working. When you are through with one of your instruments, put it where it belongs instead of leaving it on the table.

- Assignments:*
1. Name five occupations or professions in which scientific laboratory skill is the chief qualification.
  2. How highly would you prize laboratory skill in your own particular case?
  3. Take note of cases of laboratory awkwardness on the part of your fellow students and explain the causes in each case.
  4. Analyze your own laboratory work and list the operations or processes in which you are most awkward.

**9. How to write up reports of laboratory work.** From the standpoint of immediate results in terms of better grades in the course, the quality of your laboratory write-up is probably one of the most essential elements in laboratory success. If you do your work well but do not report it well, you do not gain the deserved recognition for your high quality of workmanship. Furthermore, there is danger that if you cannot write up your results clearly and concisely, you yourself do not see the significance of your work. It is an almost universal custom to require that laboratory experiments be written up and handed in for the inspection of the teacher. For that reason some suggestions on laboratory reports should be of service.

*Use a standard outline.* Ordinarily a science teacher specifies the form in which the report should be made, and frequently designates the headings under which it should be organized. A common form for this purpose includes such headings as "problem," "materials," "procedure," "results," "conclusions." If you adopt some such divi-



sions for the various portions of your report, you will usually find them to be valuable aids to the organization of the report. Furthermore, such an outline will enable you to get uniformity throughout your series of reports

*Include drawings as well as statements of fact.* To supplement your report by drawings and other illustrations often makes it much more effective than if you used only words. Simple diagrams showing the arrangement of your apparatus, or the relationships of the materials used, will generally sum up the situation very accurately and concisely. One may buy a celluloid sheet, out of which holes are cut corresponding with the shapes of the more common types of laboratory apparatus, such as test tubes, flasks, thistle tubes, etc., in chemistry. These may be used to trace with your pencil the ordinary pieces of apparatus, thus speeding up the task of drawing what you are trying to represent. The object is not to develop skill as an artist but rather to make clear the report of what you have done in the laboratory.

*Write your report as for one who did not see or know about the experiment.* A common mistake is that of writing the report for the teacher, assuming that he already understands what you did. A much better policy is to assume that the report is to be read by someone who is unacquainted with the experiment and who relies for his knowledge of it solely upon what you have included in your report. You should, therefore, state clearly your problem and your method of procedure, and describe your results in unmistakable terms, leaving little or nothing for your reader to get by reading between the lines. Even though it is a routine laboratory exercise, approach it with the same spirit with which you would report some important research discovery about which no one else in the world was informed.



*Write up your report in the order of operations.* When describing procedures and processes, it is usually best to report them in the order in which they actually occurred in the sequence of time. This is advantageous not only in making the report clear but also in enabling you to write your report as you work.

*Write a true account of the actual events.* It is ordinarily considered unethical to write up a laboratory report of what should have taken place but which did not take place because of mismanagement or because of some accident in the course of operations. The laboratory report should generally partake of the nature of a diary, telling what you actually did. For this reason it is preferable to use the first person, saying, for example, "I heated the solution," instead of "The solution was heated," or "The solution should be heated."

*Avoid laborious recital of details.* A laboratory report should not be a list of details but rather a clear and concise statement of the essential steps in the procedure. You should exercise your judgment of relative values, and include only that which is clearly of first importance. Your goal should be to make the report concise and complete, without containing an unnecessary word or detail.

*Keep your reports up to date.* A laboratory report should be written the day the experiment is done. It is exceedingly unwise to do an experiment one day and try to write it from memory the next. It is preferable to make notes as the experiment goes along and to prepare a complete final report of the experiment immediately after the work is finished. This means that your reports will always be written while they are fresh in your mind, and will likely describe truthfully the actual occurrences in the laboratory.

*Record the data for your report as you proceed.* Stop at intervals during the actual work, jot down your observations, measurements, or instrumental readings, and make such drawings or diagrams as are needed to describe what took place. All these items are more easily written down at the time, while the materials and apparatus are present before your eyes, than they are after the whole set has been dismantled and you have nothing but memory images upon which to rely. You may feel at the time that the whole is so clear that you cannot possibly forget it, but you will discover that the impressions fade out considerably after a day or two.

*Pay special attention to your conclusions or interpretations.* The weakest point in the usual laboratory report is the part that tells what it all signifies. Many a student can do the work perfectly, do all the measurements and readings correctly, yet can not get the significance of the experiment as a whole. In writing your report you should first understand it, and then make sure that your understanding is reflected in what you write.

- Assignments:*
1. List all possible advantages of writing up laboratory experiments.
  2. What common faults of laboratory reports can you mention?
  3. What methods or devices have you found that would improve your reports or make the writing of them easier?
  4. Read a laboratory report to the class and have it criticized as to clearness and effectiveness.

## **10. How to learn the symbols for chemical elements.**

In the study of chemistry it is customary to represent the different chemical elements by letters. For example, H stands for hydrogen, O for oxygen, C for carbon, Cl for chlorine, Na for sodium, and so on through the entire list. Below are a few suggestions which relate to the task of learning these symbols.

*Use routine memory as the basis for your learning of most of these items.* For the most part, the task of memorizing them is simply a routine one. There are only about eighty of them, and if you drill sufficiently they will fix themselves in your mind with a high degree of permanence. There is no substitute for actual work at the task of learning these. If you only half-way know them, you will have considerable difficulty later, because you may mistake one for another that is closely related, and thus make errors in your work. The task is a routine one, but nevertheless an essential one, and one which deserves to be done well.

*Use the symbols regularly in order to form the right habits.* In writing your laboratory reports, always express the chemical elements in terms of their symbols instead of writing out their full names. In talking about chemical elements, name them by letters instead of by their popular names. Even in discussing such a substance as water, speak of it as  $H_2O$  instead of water, to help you to fix the symbols in your mind.

*Note resemblances between names and symbols.* For the most part the symbols are closely associated with the ordinary names of the elements. For example, carbon is represented by C, oxygen by O, helium by He, sulphur by S, and so on for many of the other elements. There are cases, however, in which there are two elements beginning with the same letter, which fact calls for special methods of fixing them in the memory. We have, for example, Ca for calcium, and Cl for chlorine, as distinguished from C for carbon. The fact that numbers of the symbols do agree with the first letter of the name causes considerable difficulty for beginning students, due to their tendency to assume that all elements are named according to their first letters.

*When name and symbol are different, learn the foreign root from which the symbol is derived.* Such a symbol as Na to represent the element sodium, appears on the surface to be without rhyme or reason, but becomes reasonably clear when you learn that the root word for sodium was natrium. Similarly, we have the symbol Pb for lead, and Fe for iron, derived from the words plumbum and ferrum, respectively.

- Assignments:*
1. To what extent can failure to remember the symbols be ascribed to mere laziness?
  2. Report any specific associations by which you recall certain symbols and elements.
  3. Prepare to participate in a "symbol match" conducted like a spelling match.
  4. Make two lists of chemical symbols, one including those which are regular and one those which have special difficulties.

### **11. How to retain information about routine details.**

In the study of physics and chemistry there are almost innumerable factual details about boiling points, freezing points, specific gravities, etc., which are important in solving problems and in working out equations, and which seem almost impossible to memorize. The following suggestions deal with methods of retaining these necessary items of routine information.

*Do not memorize all these items but merely the most common ones.* Memorize a few of the key details and then get the relative positions of the others in mind. Exercise your judgment as to what to memorize, bringing into play your sense of relative values. Much of this material would be as well left in the book, to be referred to from time to time as needed, thus saving the enormous amount of time required to impress it upon your memory. We might also mention the fact that the memory is rather tricky, and that the impression may fade just enough that the items are remembered incorrectly, thus causing more harm than good.

*Group the items into families or types and learn them in series.* The principle of grouping items that are to be learned is applicable whether in the field of science or outside. It is particularly so in learning certain essentials in the field of chemistry. If four or five elements are related in families in such a way, for instance, as fluorine, chlorine, bromine, and iodine, or as in the case of iron, cobalt, and nickel, the practice of learning these all together makes for economy. Furthermore, it makes for considerably greater utility after they have been learned. The need for these routine items is frequently in a case where elements are being studied in their relation one to another, and here the family connections will be of special benefit.

*Arrange for a page of the most essential items to be kept in the front of your notebook.* After a little experience you discover what items you need most often and can select these for a special list to be kept in a handy place. You may add to this from time to time as other items seem to deserve attention, and cross out items as they come to be fixed permanently in your mind. Thus you keep approximately a page full of the items which are in process of being learned and which need to be looked up most often.

*Arrange for easy access to a handbook of physical and chemical information.* Special lists have been prepared by experts and printed in convenient tabular form, dealing with all such items as atomic weights, specific gravities, boiling points, freezing points, and, and, in fact, practically all the different types of chemical and physical data. If you expect to devote a great deal of time to the study of science, and if you intend to specialize in it, the investment of a little of your money in such a handbook will be very desirable. In other cases it is important that

you at least arrange to have access to such a book in the library or in the laboratory, and that you learn how to use it so that you can get the necessary information in a short time when you need it.

- Assignments:*
1. What reference book in your school library do you know of that would help you to solve the problem of this section?
  2. What pages in your science book serve somewhat the same purpose as the kind of reference book recommended?
  3. To what extent does the advice given in this section apply to learning routine information outside of the field of science?
  4. Start a page in your notebook in which you list the items that you need to remember most often and the necessary data about each.

**12. How to learn and use chemical equations.** The equation is a very fundamental element in the study of chemistry, and one with which many students have great difficulty. Not infrequently equations are memorized in about the same way as the proofs of geometry theorems are memorized, without a great deal of understanding, and without very much advantage to the student who memorizes them. It is hoped that the following suggestions may contribute to efficiency in this phase of chemistry study.

*Memorize the symbols that represent the different elements.* A chemical equation is almost invariably expressed in terms of the symbols rather than the actual names of the elements, and if these are not known your understanding of the equation itself is almost impossible.

*Learn the valence of most of the elements.* This will help you to understand the balancing of the equation. The whole phenomenon of balancing equations hinges very definitely upon the element of valence, without an understanding of which little hope of good results is possible. If you do not actually remember the valence of a particular element in the equation, it is wise to look it up as a part of the process of studying that equation.



*Learn the meaning and causes of the chemical reaction before memorizing the equation.* Probably one of the most common mistakes in learning chemical equations is that of simply memorizing them as they are printed in the book, without a definite understanding of what takes place or why. Memorizing chemical equations in this rote manner is exactly comparable to memorizing a theorem in geometry without understanding the logical relationships which enter into the proof. It is preferable to think an equation through or to read the theoretical discussion of the reaction represented, and then after it is fairly well understood to memorize the equation as written, if you desire to retain it. By all means, however, meaning should precede memorizing.

*Draw a picture representing each item by its letter.* Such an expression as  $\text{H}_2\text{O}$  may for purposes of easy learning be written with two H's and one O in order to make more clear to your mind the fact that there are two atoms of hydrogen and one of oxygen. If on the other side of the equation you find the two hydrogen atoms separated and recombined with other elements, less imagination is required in order to visualize what has taken place. Some students find it advantageous to draw little squares, circles, crescents, and other shapes, each representing a particular chemical element, and then to rearrange these on the other side of the equation according to their positions after they have been through the chemical reaction. The point is simply that if you make the elements take on a more concrete character the equation is easier to understand.

- Assignments:* 1. What helpful suggestions on learning chemical equations can you give that are not given in the above section?  
2. How does the method for learning chemical equations compare with that for learning algebraic equations?



3. How does memorizing a chemical equation compare in value with memorizing a geometric proof?
4. Explain why a chemical equation cannot be learned apart from the rest of chemistry.

**13. How to learn and use mathematical types of scientific formulas.** In both physics and chemistry there are numerous formulas of a mathematical nature which express relationships needed for solving problems. When scientists discover that certain definite constant relationships exist between elements and forces, they attempt to express these relationships in formulas which may be used in standard ways and applied to problem after problem. Formulas are therefore very economical devices for organizing your work, and if used as suggested below, are very valuable aids to science study.

*Be sure you know what each symbol in the formula represents.* In using such a formula as that which occurs in physics in connection with the law of falling bodies expressed in the terms,  $s = \frac{1}{2} a t^2$ , it is important not only to know that  $a$  stands for acceleration but also that acceleration means the gain in speed that takes place as the body falls. If you try to substitute the items in the formula in a mechanical way without understanding the basic significance of the elements in it, you may get along well for a short time but you are certain to encounter difficulties in the end.

*Learn the origin, derivation, or meaning of the formula.* It is entirely possible to work with a formula in a blind way, accepting it on faith and believing that it is true but not knowing why or how it was ever arrived at, and get fairly good results in the solution of a few routine problems. If, however, you go one step beyond this stage and get the theory underlying the formula, understanding why it is true and how it was discovered or worked

out in the first place, you will have much greater adaptability to new scientific situations. You will be in a much better position to deal with special cases, and will be well repaid for the time required to get the more fundamental type of mastery. There are limitations to this point, of course, in connection with some of the more abstract and complex formulas; it must be granted that it is more economical to take some formulas on faith during an elementary science course, because the effort to master their basic significance will be more than you can afford while in the early stages.

*Solve problems involving formulas.* This is a good way of getting a better idea of their meaning. Numerous cases occur in which a formula is difficult to understand at first but in which its meaning clears up after it has been applied in the actual solution of two or three problems. A formula may be quite abstract when stated as such, but it becomes reasonably concrete and meaningful when its connection or application to actual concrete situations has been brought out. A fairly good rule, therefore, is to try to understand the formula, then work a few problems involving it, and then go back again to the study of the formula itself.

*Practice applying formulas to concrete situations.* To clear up the mathematical aspects of a formula is a purely routine matter. To choose the right formula for a particular problem, however, requires good judgment and clear thinking. If you practice picking out the right formulas and inserting the correct data in each, you may be justified in omitting the final step of making the routine mathematical calculations, unless, of course, you have some special need of the final answer or wish to check your work.

*Do not trust your memory on complex formulas.* It is

better to look them up in the book and be sure you are right. If you think you remember a formula but in reality have one letter or one number wrong, this little slip of the memory will invalidate all your work in the solution of the problem. Some formulas are by nature quite abstract and are expressed in strange symbols. They are often difficult to memorize and undependable after they have been memorized. It is at least open to question whether or not you had better attempt to use your memory or had better be frank and honest with yourself, admit your inability to be sure, and refer to a book where the formula is written in order to use it exactly and accurately.

- Assignments:*
1. Give all the values or advantages of formulas that you can.
  2. Mention the most useful scientific formulas you know.
  3. What mathematical processes are most needed in solving quantitative formulas?
  4. What percentage of scientific formulas do you think it is worth while to know how to derive?
  5. What is a good way to look up needed formulas easily when you want them?

**14. How to keep in touch with current scientific progress and discovery.** Since you are living in an age of tremendous scientific research and progress, it is impossible to keep up with everything new that is coming out in the scientific field. To keep informed about the most important of these new revelations is quite a task; yet it is worth all that it requires in the way of time and effort. It yields recreational benefits and enables you to use your scientific knowledge in your daily life. While it is true that probably the most important advice in connection with this problem is simply to do it, still it is possible that the following practical suggestions may help you to keep up to date.

*Actually read popular-science reading matter instead of attempting in vain to read the more scholarly types.* After a few trials you can estimate your capacity as a reader of scientific material, and in that way discover whether you are capable of reading and enjoying the more scholarly scientific writings. The interest in science is so nearly universal that you can find periodicals of a scientific nature written on almost all levels from the exceedingly elementary and popular on up to the most highly technical. While it is a noble ambition for you to strive to read the most technical scientific works, still you live in a world of reality and had better face realities rather than try to live in a land of dreams. Consequently, it is advisable to find the level upon which you can really read science with enjoyment, and then actually read considerable material on that level. If you attempt scientific works beyond your reach, you soon lose interest and do not read any at all.

*Read regularly some magazine which deals with scientific topics.* If you get used to one journal which has the style of presentation or the type of articles that interest you, read it regularly to get something of a balanced ration, or an organized sequence of scientific information. On the other hand, if you adopt a policy of reading a little here and a little there, skipping about from one type of journal to another, you may get some repetition and omit many elements of information which would be of decided value. A subscriber to the *Literary Digest* who religiously reads each week the section on science and invention will be fairly well informed about current progress in scientific discovery. The same is true if he reads such journals as *The Scientific Monthly*, or *The Scientific American*. As you become more of a scientist and more thoroughly specialized in the field, you may

prefer to subscribe to journals that are of a restricted character within your field or specialty. You will do well to read them regularly in order to achieve completeness, sequence, and continuity in your scientific reading.

*Become a member of a scientific book club.* A club has recently been organized on a national basis, entitled "The Scientific Book Club, Inc.," whose aim is to direct the reading of its members along lines of current scientific interest. It involves a committee of outstanding scientists who select the best book of the month in the field of science and send it with a bill to each of the members. Such an organization may do much toward making your reading of current scientific literature more profitable.

- Assignments:*
1. Bring to class a report of some scientific fact of which you have recently read.
  2. What kind of science reading do you like best and do most?
  3. Report to class the names of all scientific books you can recommend as being interesting and readable.
  4. Report to class any scientific errors or inaccuracies you have noted in newspapers or general literature which you have read.

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## CHAPTER VI

### BIOLOGY

*"I believe a leaf of grass is no less than the  
journey-work of the stars,  
And the pismire is equally perfect, and a grain  
of sand, and the egg of the wren,  
And the tree-toad is a chef-d'œuvre of the  
highest,  
And the running blackberry would adorn the  
parlors of heaven,  
And the narrowest hinge in my hand puts to  
scorn all machinery,  
And the cow, crunching with depressed head,  
surpasses any statue,  
And a mouse is miracle enough to stagger sex-  
tillions of infidels!"*

WALT WHITMAN.

Biology is the science which deals with life and living beings. It includes both botany and zoology, the study of plants and of animals. Since man himself is an animal and depends so greatly upon plants and animals for his food and comfort, there is good reason why everyone should try to understand the science of biology. Furthermore, the realm of nature offers numerous opportunities for enjoyment and recreation. In this chapter we shall consider a number of ways in which the study of biology may be improved.

**1. How to get actual specimens for study.** Numbers of biological supply houses specialize in the service of supplying plants and animals for study in biology classes.

Naturally, specimens obtained from such sources are likely to be expensive, and sometimes they are difficult to get. This fact tends to hamper biology study unless other sources of supply are made available. Fortunately, this is usually possible to a considerable degree if the students in the course will cooperate in getting the needed specimens. The following are a few suggestions on this point:

*Indulge in such sports as hunting, fishing, camping, and hiking.* Outdoor sports are very enjoyable and very good for the health. They enable you to make contacts with nature in all of its various forms and to observe numerous forms of life, both plant and animal. One of the great contributions which biology and nature study have to offer you as a student is that of awakening an interest in such outdoor recreation. This interest, in turn, helps to provide material for the other aspects of biology study.

*Make special trips for the purpose of collecting biological specimens.* In addition to the above-mentioned recreational activities, it is well worth while to go to the woods or streams or meadows purely for the purpose of finding a special variety of grass, bird, reptile, or fish. Having some particular objective in mind often lends more interest than simply going on a hike for its own sake. Excursions for the collection of particular types of specimens may be both enjoyable and fruitful.

*Study about the forms of life for which you are seeking, as a means of directing your search.* Make use of your reading in order to learn about the life habits of the animals being sought, or to discover the kinds of land formation, soil, etc., in which to find the kind of plant you wish to locate. The expert botanist can find a plant of a particular kind with much less trouble than one who



does not know how to look for it. Likewise, the experienced hunter can locate his game with a very small amount of effort as compared with the amateur. And the fisherman who has had experience and understands the habits of fish can make a good catch when the amateur comes home from his trip without any.

*Be alert when out in nature.* The woods and meadows are full of interesting forms of life for the person who cares to take note of them. Whether you are out for a collection trip or simply on a hike, there is every reason to keep your eyes open and try to learn something every minute.

*Assist in fights against plant and animal pests.* Every community has its problem of resisting the encroachments of harmful plants and animals. A scientist recently made the statement that the world is in danger of being overrun by insects, and that it is questionable whether man will ever be able to conquer the insect world. Millions of dollars are being spent every year in the fight against rodents that endanger the crops, or against bacteria which spread disease. In collecting specimens, therefore, there is an advantage in concentrating on harmful forms of life, so that if animals or plants are destroyed, service is rendered at the same time.

*Exchange specimens with other students.* One member of the class may have access to a large number of plants or insects of some particular variety that flourishes in his neighborhood, while another student may have access to numbers of another type. Each may collect and bring to school large numbers of the kind most plentiful in his region. By means of exchanges all may be supplied with a variety of types when it would be difficult for any one to locate every kind for himself.

*Preserve specimens that have been collected.* If you bring

in and mount or preserve numbers of useful specimens, they may be exceedingly useful at some other season of the year when specimens are not so plentiful. Thus you may serve other classes that take the course. Each class in biology should think of the interests of those who are coming later and add something to the permanent collection for the course. In this way it will not take long to build up a splendid school museum of biology that will benefit generations of students for a number of years.

*Visit museums and zoos.* In addition to the specimens which you yourself may collect, take advantage of the labor of others who have spent enormous amounts of time and energy collecting, mounting, and preserving rare specimens. Scientific expeditions have gone to the heart of Africa, South America, and other remote parts of the earth, and have brought back rare forms which they have placed in the nation's museums and zoological gardens. A person who has had an introduction to biology may acquire a new interest through these museum collections. He will ordinarily profit by going back to study in more detail the exhibits which previously he observed only superficially or merely ignored. There is much more for you to see in a museum after you have studied biology and have had your eyes opened.

*Raise animal pets and garden plants.* One way to gain valuable biological information through the actual observation of living things is to plant a garden and raise your own flowers, or to acquire a few pets and watch them live and grow. Actual contact with living things and actual responsibility for the care of plants or animals is a valuable experience for anyone.

*Assignments:* 1. Tell the class of any specially good hunting grounds for specimens of which you may know.

2. Help to organize a class survey of the neighborhood to locate good sources of specimens for future use.
3. Check through the biology course which you are taking and note how many of the specimens may be secured locally and how many will have to be ordered from a supply house.
4. Give any helpful suggestions you can on how to secure specimens in addition to those included in this section.

**2. How to study living beings in their natural environment.** A difficulty that commonly confronts a biology student is that he must study dried-up plants in the laboratory, or study animal specimens which have been preserved in chemicals and are, therefore, quite different from the living forms. The following suggestions are offered in order to help introduce more of the element of study of specimens as they are in nature.

*Have your own pets, potted plants, and garden flowers.* Mention has already been made of the importance of direct contact with domesticated life, but possibly another illustration or two at this point may be to advantage. The average person has little opportunity to observe fish in their natural environment in the streams. Yet by the simple device of purchasing a bowl and a couple of gold fish he may learn in his own living room a great deal about the life habits and daily activities of fish. The same may be said regarding a plant which grows in a pot on the window sill.

*Take hikes and excursions into the realm of nature.* This point has been mentioned in connection with collecting of specimens, although it may well be repeated here because of its application to the actual study of specimens.

*Go hunting with a camera.* Those who have indulged in the sport of camera hunting report that it is exceedingly interesting and enlightening. To stalk game with a camera and take pictures of unsuspecting creatures in their normal life activities is coming to be a common

part of the work of the expert scientists who go to the African jungles or to the Mongolian desert. Making a collection of bird pictures, for example, will open up avenues of keen enjoyment as well as profit, and will enable you to spend many hours of purposeful observation of birds in their natural environment.

*Use a field glass for observation purposes.* Sometimes it is difficult to observe an animal in his natural pursuits because of frightening him when you come within range. The use of a field glass increases the range of effective observation and helps to counteract this difficulty.

*Visit national parks during vacation season.* Some of the national parks may be classified as great natural biological museums. The bears of Yellowstone Park are widely known to all; many of the national parks are stocked with deer, buffalo, and rare birds. Such parks are practically the only places where one can observe in anything like their natural environment many of the animals which at an earlier period roamed at large over the plains and in the forests.

*Study the natural habitat groups in museums and zoological gardens.* It is customary in the larger museums to arrange displays of animals, plants, and insects in lifelike positions in order to give a greater sense of reality. Since numerous forms of life cannot be observed in their natural environments because of distance, such substitutes as these are exceedingly helpful.

*Mount and display specimens for your own biological museums.* Endeavor to collect forms of life and preserve or mount them for students in later semesters. Give your exhibits the greatest possible amount of naturalness and always check your work by comparison with the natural environment from which you collected your

specimens. You will thus become interested in the daily habits and lives of the creatures which you display.

*Get pictures taken by observers who have had opportunity to study animals in their natural environments.* There will be numbers of animals and plants which you can never actually see in their home settings. In such cases, pictures may supply the element of reality and serve as a substitute for direct observation. You can get a much better idea about the actual life habits of a giraffe or a crocodile from a few pictures supplemented by printed matter than through an enormous amount of reading without the aid of pictures. Students of biology may contribute much to the enrichment of the course by bringing to class choice pictures which they see and which relate to the forms of life being studied.

*Assignments:* 1. List all the advantages and the disadvantages of basing observations on living forms.

2. Join in a competition with your classmates to see who can bring in the best wild-life kodak picture.

3. Start a picture book in which to keep the kodak pictures of birds and animals which you snap from time to time.

4. Arrange the methods and suggestions of this section in the order of their value to you and add additional ones.

**3. How to observe specimens.** The effectiveness of observation may be improved by the way in which you go about it. The same amount of time spent in observing may yield twice as much gain if applied effectively as if spent in a haphazard manner. The following suggestions are intended to help improve your ability to observe.

*Observe more than one specimen.* One of the important characteristics of living things is that no two are exactly alike. Each has its own individual peculiarities as well as many traits in common with all others of the same species. If you observe only one, you are likely to fail

to make a distinction between general characteristics of all of that type and the special characteristics of that particular specimen. It is well to observe several and to compare them with each other in order to get the correct notion of the general type or species.

*Make prolonged or intensive observations of a single specimen.* What has just been said about observing many specimens should not be taken as justification for failing to concentrate on any one. It is desirable to observe the same specimen under numbers of different conditions and in all of its aspects. Thus you get some definite idea of the sequence of its behavior, and of the continuity of its life habits. In other words, it is well not only to observe many specimens superficially, but also to observe one or two specimens intensively and for a long time.

*Use special instruments for intensive observation.* The human eye is not capable of taking in all of the available information regarding a specimen under observation. The use of the microscope, field glass, or camera, enables your eye to extend its range of effectiveness and thus to enrich the results of your observation.

*Use your naked eye before resorting to instruments.* In general, it is preferable to observe an object as a whole before undertaking the minute analysis of its parts. Likewise, it is preferable to use the naked eye to get a general idea of what it is like before taking the microscopic view which elaborates a single detail. The naked eye observation gives a sense of perspective, while the instrumental observation makes possible the minute analysis which should follow.

*Supplement observation by information.* The observation of a specimen should be combined with an actual study of it from such sources as reading, lectures, and



critical thinking. If observation consists only of getting sensations, it is relatively useless. These sensations should be carried a step farther and converted into definite convictions, judgments, or formulations of principles that interpret what you have seen.

*Use the laboratory manual as an observation guide.* As a general rule, biological science courses involve the use of a laboratory manual in which questions and directions are used to point your attention to the essential elements that are to be observed. We shall assume, of course, that your laboratory manual is well prepared, in which case it should be of very distinct service in giving guidance and direction to your observations. It is not necessary for you to limit your observation to the particular points that are suggested in the manual, as if those made up the sum total of things to observe. It is usually well, however, to provide for all of the elements mentioned there, and then to make such additional observations as your interest and ingenuity may suggest.

*Observe biological phenomena in process or in action.* If you are studying a living specimen of animal life, it is well to watch it in motion or while it is engaged in some characteristic form of behavior. Generally, a plant should be observed in connection with its growth, which naturally requires making observations at intervals of days and weeks in order to take account of intervening growth. There are naturally many phases which cannot be observed except after the specimen has been killed, but certainly it is unwise to confine all observation to the dead forms.

*Introduce experimental factors and observe the changed conditions that are brought about.* You can tell more about a person's character or temperament by asking him a question and getting him started talking than you can



by simply looking at him as he sits in his chair; likewise, you can learn a great deal more about a plant or animal under the stimulation of a change in heat, light, or food supply, than you can possibly learn under one single unchanging set of conditions. It is well, therefore, to experiment with your specimen, and change the environment or setting as much as possible.

*Draw a sketch of what you see.* The use of drawing as an aid to observation in biology has been known and practiced for many years. Psychological studies of observation have revealed that the effort to draw what you see not only helps to impress the visual image upon your mind, but also directs your attention in the next observation period to the facts which were difficult to draw the first time. Thus your drawing improves the quality of your observation. A good rule is to observe, record, observe again, and so on until you are sure that you have grasped all the essential elements. In general, we may say that you have not fully seen a thing until you can make a drawing to represent it.

- Assignments:*
1. How does observation in biology differ from that in other sciences?
  2. Criticize the statement that there is some loss and some gain whenever you try to observe with the aid of instruments.
  3. Prepare the arguments on both sides of the question whether to observe one specimen thoroughly or many specimens superficially.
  4. Experiment by observing one object with and another without drawing, applying the same amount of time to each and checking later to see which one you know most about.

**4. How to use the microscope.** The microscope is as fundamental in the study of some phases of biology as the telescope is in the study of astronomy. Without it you are simply unable to make any effective observations of bacterial forms of life, or of the cell structures of plants and animals. The following are a few sugges-

tions regarding methods of using the microscope in order to get the greatest benefit from the work.

*Get acquainted with the physical construction of the instrument.* Analyze it as to how it is put together. Note its movable parts, the methods of adjusting the lenses, the difference between the fine and coarse adjustment, the arrangement for the reflection of light through the slide, the arrangement of the clamp for holding the slide in place, and all the other numerous details of mechanical construction. Much of the blundering and ineffective work that is done with microscopes in biology classes would be eliminated if the students took more time at first to get acquainted with their instruments.

*Practice for physical skill in making the mechanical adjustments of the instrument.* It is necessary to become expert in manipulating the microscope. This includes such simple details, for example, as being able to stop the raising or lowering process the moment the best visualization is secured. Likewise, in adjusting the light by turning the mirror beneath the slide there is room for a certain amount of skill and muscular precision. A considerable part of the skill necessary to operate a microscope consists of judgment as contrasted with muscular manipulation. It takes practice to know how much light is required, or how much magnification will yield the best results.

*In finding an object, use the coarse adjustment first and the fine adjustment later.* Most compound microscopes are equipped with two adjusting screws, one of which produces a marked effect when it is turned, the other only a small change even when the screw is turned completely around several times. When the coarse adjustment has brought the object within range and has yielded a fairly good visualization, the fine adjustment should be used to

perfect the process of bringing the image to its sharpest and clearest state.

*Keep the lenses clean.* A dirty or cloudy lens will obscure the image to such an extent that it is almost impossible to get good results, even through the most careful manipulation of the instrument. Anyone who has worn glasses knows how much obstruction a little fog on a lens may produce.

*Exercise caution appropriate to the expense of the instrument used.* Most microscopes are rather costly pieces of apparatus. A single high-powered lens may cost seventy-five dollars, and those of lesser strength may be far from cheap. By simply screwing the lens down upon the slide it is possible to scar or scratch it and completely destroy its utility. The same effect may be produced by trying to clean it with a rough or gritty rag instead of the regulation cleaning material.

*Practice locating familiar objects under the microscope until you master the mechanics of manipulation.* In the early stages of learning to use the instrument it is preferable to practice on materials which you easily recognize rather than upon strange or unfamiliar objects. A slide mounted by your instructor and showing some familiar one-celled animal or other organism will furnish good material for you to practice upon in learning how to adjust your instrument, to bring it to a clear focus, to use your coarse and fine adjustments, and so on. When an object is highly magnified it looks so different from what it does to the naked eye that you may have it under the microscope and fail to discover that you have what you are looking for. This difficulty in using the microscope is greatly reduced if you are already familiar with the specimen in magnified form.

*Prefer good light and low power to poor light and high*

*power.* We are told that in the field of astronomy the problem is not how much magnification can be secured through a telescope, but rather how much light can be trapped in order to gain visibility in the object after it has been brought within the range of vision. When an object is highly magnified, the amount of light which ordinarily comes from it to a given area of the retina of your eye is reduced in proportion. The result is that as you increase magnification, you decrease the visibility due to a lesser amount of light. It is well to practice varying the light and experimenting until you find the light that will bring out clearly the essentials of what you are studying.

*Start with a lens of low power and work up rather than with high power and work down.* Use the low-power lens to get the desired field and to explore the area in general. This will give a sense of perspective and show how the particular part which is to be studied under the high-power lens relates to the whole. If you find that the low-power lens does not give the clearness of vision that is desired, the high-power one may be called into play as needed. A point that is not usually obvious to the beginner, but which is very important, is that a high degree of magnification may be a handicap rather than an aid to clear observation. Too much magnification may really do more harm than too little, because it destroys the sense of perspective.

*Select for intensive study a favorable section of the slide.* The entire area of the slide may be worth observing, but ordinarily some places are more clear, more typical, or more significant, than others. Before settling down to making your drawings of what you see, you should move the slide about under the lens and pick out the

portion of the total area which seems to be most desirable.

*Take account of the fact that images are reversed.* In the process of the light's passing through the lenses of a compound microscope the image that is under the glass is exactly reversed. The result is that what was on the right appears to be on the left. This is readily seen if you take a sharp instrument and introduce its point from the right. It appears to come into view from the left.

*Keep both eyes open while observing.* The usual practice of the amateur in closing one eye while looking through the other is very undesirable. In the first place, it causes unnecessary muscular strain and results in eye fatigue in a very short time. In the second place, it is altogether unnecessary because with a very little practice you can learn to ignore what the other eye sees and concentrate your entire attention on the view that comes from the microscope. This permits a great deal more relaxation of your eye muscles and also permits the development of the capacity to do your drawing without removing your eye from the microscope. This is accomplished by using your right eye, for example, to direct your drawing, and your left eye to make your observations, thus alternating attention back and forth from what you see with your right eye to what you see with your left, without moving your head or shutting or opening either eye.

- Assignments:*
1. List all the important parts of a compound microscope and tell the purpose of each.
  2. Report any devices, tricks, or methods you have found helpful in using the microscope.
  3. Report the difficulties you have had in your own use of the microscope.

4. Prepare for a test in which you answer specific questions that deal with the use of the microscope.

**5. How to draw what you see.** Drawing has a more important place, probably, in the average biology laboratory than it has in the laboratory of any other science, and deserves considerable attention if it is to be carried out effectively. In the following paragraphs are a few points which have been supplied by experienced teachers and students of biology, which should help you to draw more effectively.

*Take a course in drawing.* Students who have had drawing instruction do considerably better in biological laboratory work than other students. They already know how to represent forms, shapes, and space relations which the student who lacks training in drawing may see perfectly well but not know how to represent on paper. It would probably not be wise to take a course in drawing solely as a preparation for biology if such instruction had no value in situations outside of the biology laboratory. Since, however, the ability to draw is a valuable asset in almost all subjects and in almost all phases of life, a course in it is well justified upon its own merits. Its by-product value in the biology laboratory is then all clear gain.

*Equip yourself with standard drawing materials.* Buy good instruments and drawing paper. Supply yourself with lead pencils of the proper degrees of hardness. Also get art gum for making erasures instead of using the ordinary rubber eraser. Good workmanship in any line is difficult without good tools, and this is certainly true in the field of drawing.

*Use drawing as a means rather than an end.* Draw to discover the essential features. In other words, draw to study and observe rather than simply to produce a fin-



ished piece of work. The drawing itself is not the main value. If such were the case, the class might employ an expert artist to make all the necessary drawings and supply each student with a personal copy. Unless you are genuinely learning as you draw, you are wasting your time.

*Strive for accuracy and clearness rather than beauty.* Laboratory drawings are in the category of practical art rather than fine art; they are for utility rather than beauty. They should aim to represent ideas rather than to appeal to the æsthetic sense. As you do your drawing, think of yourself as a student rather than as an artist.

*Make sketches and diagrams rather than realistic drawings.* A simple drawing that makes the desired point stand out clearly is better than one which makes the object look complete and natural but brings in non-essential details that detract attention from the main features. A very few lines representing the major outline of an object may really convey a more effective idea than a drawing filled in completely and including the element of shading. It is extremely difficult for the average student to make his drawings clear if he introduces much shading and filling in, or tries to achieve realism and photographic detail.

*Draw from an actual specimen rather than from memory of a generalized type or from a textbook description.* It is ordinarily preferable in laboratory work to make a truthful and accurate representation of one particular plant or animal rather than to piece out a typical drawing by including elements from several different specimens. In drawing a crawfish, for example, you may have one with a very small claw and a very large one. This is not typical of crawfish in general and you may be tempted to make your drawing not as your specimen

actually is but as you know crawfish in general to be. To do so, however, takes away a great deal of the element of reality and causes you to draw from memory and imagination rather than from actual sense impression. It is desirable for you to make a mental note of the fact that your specimen is not absolutely typical in this respect, but your drawing should represent the specimen as it is.

*As a substitute for drawings in certain cases, use photographic prints and outline charts in which you label the parts as you identify them.* As an exception to the rule mentioned in the last paragraph, it may be well to make occasional use of printed charts and photographic reproductions of drawings produced by experts, as a substitute for the actual construction of drawings by yourself. For example, each student in the class may have a copy of a good drawing of a one-celled animal. Each may then observe his particular specimen under the microscope, compare it with the one shown in the drawing, and label the various parts. This does not exactly involve drawing from a typical specimen, but the printed drawing which is furnished was probably based on an actual individual specimen and not a generalized type. The advantage of using such an outline chart or printed drawing, instead of making an original one each time, is similar to the advantage of using an outline map in the study of geography.

*Make the drawing on a large scale, or with ample proportions.* The beginner in drawing often tends to crowd his drawing into such a small space that there is not really room to represent the essentials clearly. It is preferable to make a large drawing, allowing plenty of room for detail. The task of drawing then becomes not so much one of mechanical skill in making the pencil

go in the direction you want it to go, as one of simple observation and clear perception. If the drawing is on a very small scale, a slight error due to mere nervousness or lack of motor control may cause considerable distortion, whereas the same amount of variation from the desired path would be of no importance in a large size drawing.

*Draw the larger outline first and fill in details later.* It is never economical to attempt to work out the details of some small section before the outline of the whole is finished. It is likely that the major plan may have to be revised, thus spoiling all the previous work that has been done.

*Draw lightly first and deepen the lines after you are through with the drawing.* When a line is produced the first time, keep in mind that it is tentative and that you may wish to change it. Draw it as lightly as you can and still make an impression. The old rule, "Do it well or not at all," does not mean that the drawing should proceed in final form from the beginning.

*Label the drawing clearly and accurately.* There is a certain amount of terminology, including names of parts and tissues, which should be learned in connection with your study of a specimen. Drawing the picture and adding labels to indicate the names of the various parts has been found to be a fruitful method of mastering this terminology. Labels written upon drawings should be made carefully and neatly and in such a manner as not to confuse the eye as it surveys the drawing as a whole. Names should be written outside of the drawing and have lines running from them to the parts to which the names apply. It is preferable to write all labels on a horizontal line rather than to have them radiating from the drawing in all directions. The horizontal ar-

rament permits you, in studying the diagram later, to check over all the items while holding the paper in one position. Since drawings have value as permanent records for later study and review, the labels are useful to you. They also give the teacher evidence that you know the parts that are represented.

- Assignments:*
1. What suggestions in this section have you been violating in your drawings?
  2. Bring to class a sample of your biology drawing and have it criticized.
  3. What new drawing skills do you need to acquire for biology laboratory that you do not get in the usual drawing course?
  4. Compare laboratory drawings and artistic drawings as to method or procedure.

**6. How to dissect specimens.** Many of the observations in biology must be made upon portions of plants or animals not visible on the surface. This calls for making cross-sections, or removing the outer layers of tissue, in order to gain access to those underneath. The following are some rules and suggestions for the improvement of this phase of laboratory work:

*Place observation before surgical skill as your major aim.* The purpose of dissection in biology in the average class is to improve observation and to afford an insight into the structures or tissues observed. The purpose is not to become skillful as a surgeon, unless you are planning to major in biology and go on into medicine or surgery as a life work. Even so, it is necessary in the introductory course to place a great deal of emphasis on observation and to keep your eyes open as you work in order to learn as much as possible about the parts that are being studied.

*Get a good set of instruments and keep them in first-class condition.* The efficiency of a workman depends very much upon the quality of tools which he uses. This is espe-

cially true in such delicate work as dissection of specimens in the biology laboratory. A sharp instrument will leave a clean cut and cause the tissues to be in the best possible condition for observation. A dull one will cause tearing or pulling the tissues out of place as the instrument goes through. Similarly, dirty or rusty instruments are almost certain to result in inferior work.

*Learn to select and use instruments according to their specialized functions.* A knife should not be used as a substitute for scissors, nor scissors as a substitute for a knife. A considerable portion of the faulty work that takes place in the laboratory is due to such careless interchanges of instruments.

*Study the specimen as a whole before dissecting it into its parts.* It is well to study the entire plant or animal from the exterior viewpoint first. Then try to get a definite idea of the various parts and appendages and observe how they all relate to each other before you begin intensive study and dissection.

*Do a little at a time.* Remember that a cut can always be deepened if it is not deep enough the first time, but can never be made shallower if you go too far with the first stroke. If you take off too deep a layer of tissue, you can never replace it.

*Avoid disarrangement or injury of the tissues that are to be observed.* Exercise care that the parts which you wish to observe are left in condition suitable for observation after you used your instruments on them. For instance, if you wish to make a cross-section of a leaf, it may be desirable to place it between two pieces of pith, and cut sections of both leaf and pith, keeping the pith and the knife wet in the meantime in order to avoid leaving a ragged edge as the knife enters or leaves the leaf.

*Note the relationships between the tissues with which you*

*work.* Proceed as if you were going to reconstruct the specimen after getting it completely dissected. If you were "dissecting" an automobile for the purpose of repairing the inner portions of the engine, you would observe how the parts are put together so that when you finished your work you could put them back together so the engine would run. The same thing is true in biological dissection, not because you will actually reconstruct the specimen, but because the purpose of dissection is to get a clear and definite idea of how the organism functions.

*Imitate the procedure of your teacher, and use pictures of dissected specimens as guides or models.* A young surgeon learns how to perform operations in part by watching an experienced surgeon do operations, and also by studying books on surgery in which there are numerous pictures showing each step in the procedure. Similarly, it is possible to get pictures of dissected specimens in various stages of the removal of tissues and also to study diagrams or descriptive analyses of the various stages in the work. Time spent in the use of such visual materials helps greatly.

- Assignments:*
1. List all the advantages or values you can that grow out of dissection in the laboratory.
  2. What dissection skills does the average person need outside of school?
  3. What kind of previous study would you make in order to get ready for a dissection?
  4. Think of some specific case where a dissection was poorly done and see if you can explain why.

**7. How to overcome squeamishness or "chicken-heartedness."** Some students hesitate to study biology because they are so "chicken-hearted" they do not feel that they could ever stand to cut the flesh of a crawfish or a toad. This difficulty is not nearly so bad as it seems to the



uninitiated, but does confront some students, and for that reason suggestions are in order concerning ways to overcome it.

*Consider the overcoming of squeamishness one of your aims in the course.* Take a firm attitude and bring your will power to bear on the situation. To be able to give first aid to a person who has been seriously wounded in an accident is a very useful ability; yet numbers of people are so "chicken-hearted" they would let a person die in an emergency because of their lack of self control in the presence of blood. To be able to dress a chicken for dinner or to clean fish that have been caught at the river is definitely useful. The biology laboratory should contribute toward the development of this capacity to control your imagination and do a useful, though possibly unpleasant, form of work.

*Begin with lower forms of life.* The earliest dissections may well be on plants. Then when you begin working on animals it is well to start with some lower form of life, such as a crawfish, rather than a higher one like a cat or a rabbit or a pigeon. After having become accustomed to dealing with forms of life about which you are not sentimental, you can more easily do dissections of animals of a higher species.

*Begin with fresh rather than preserved specimens.* One of the features that contributes unpleasantness to the dissection of preserved specimens is the odor of the preservative. The beginner is likely to confuse this with his natural repugnance for the object itself. In that case the use of a fresh, unpreserved specimen will practically solve the problem. There are, however, exceptions to this rule, as in the case where the preservation of the specimen on which you work gives it an unnatural ap-

pearance and helps to create the impression that it is mere inanimate material.

*Remember that you are not causing pain.* Think of the specimen as just so much material, like clay, or wood, or wax. Do not compare it with your own flesh nor with that of your pets or lower animals toward which you have kindly feelings. You do not actually make dissections of animals which are living and conscious, and there is no reason why you should experience a feeling of sympathy for them in their purely imaginary suffering.

*Use a bold stroke rather than several timid and ineffective ones.* If you have to make an incision or amputation of a member, do so promptly and in a decisive manner. This helps you to overcome your squeamishness in much the same way as diving into the swimming pool head first helps you to overcome your dread of the cold water. It is possible to give yourself a shock by plunging into a piece of unpleasant work so that the little things which formerly caused unpleasantness or even nausea will become insignificant and be unnoticed. This may be illustrated in terms of working with machinery. A little speck of grease on your finger when you are trying to keep your hands clean may cause a great deal of annoyance or unpleasantness. But if you go into the job and get grease all over both hands, a little more does not matter. The same thing is true in the biology laboratory.

*Clean a fish, or dress a chicken, or work with some other food animal.* A boy who has caught a fish at the river and has taken the trouble to clean it at the water's edge will have little trouble in maintaining self-control when he deals with a preserved specimen of a shark in the laboratory. Likewise, a girl who has cut the pieces of a chicken apart, ready for the frying pan, is less likely to

lose her self-control when the laboratory activity calls for dissecting a pigeon, frog, or honey-bee.

*Eliminate as much of the odor as possible.* Make conditions as workable as you can by providing plenty of ventilation in the laboratory. The breeze or circulation of the air will carry the concentrated odors out of your way. Odor is an important factor in creating the feeling of nausea; in fact, some persons who are unusually sensitive report that they use a swimmer's nose clamp while working with unpleasant specimens and that they have no further difficulty.

*Concentrate your attention on what you are hunting for or trying to find out.* Put foremost the purpose for which the dissection is made. Hold the "search-for-knowledge" attitude instead of the "thinking-about-the-disagreeableness-of-what-you-are-doing" state of mind. Maintain such a curiosity or interest in what you are about to discover that you do not have time to become self-conscious or to give way to your inclinations.

- Assignments:*
1. List all the advantages and disadvantages you know that result from squeamishness.
  2. Report specific incidents to support the statement that chicken-heartedness is a handicap.
  3. Describe the methods by which you overcame some specific dislike or managed to discipline yourself with regard to some unpleasant work.
  4. Report the results of your experience in observing a meat cutter at a butcher shop, or in cleaning a fish or fowl for dinner.

**8. How to avoid embarrassment in discussing topics relating to sex and reproduction.** A very important topic in biology has to do with the method by which life on the earth makes itself permanent and how it brings another generation into existence. This is ordinarily spoken of as reproduction, and is accomplished in numbers of different ways. We note, for example, that some

forms of grass reproduce themselves simply by sending out shoots which take root and grow, these in turn sending out other shoots, and so on indefinitely. In higher forms of life, however, reproduction takes place on the basis of sex, and society has built up certain conventions or attitudes toward sex which sometimes make it embarrassing to speak plainly about simple matters that should have no evil associations whatever. The following suggestions are related to this problem.

*Be frank and clean minded, and try to overcome any false modesty.* "Evil to him who evil thinks" applies very forcibly in this connection. It should be remembered that reproduction is a function of vital importance to the race and that its importance warrants study and discussion in a sensible, natural, and normal way. Vulgar-minded persons may have associated evil with this phase of life, and in that case a science course is a good place to build up sensible and wholesome associations instead.

*Begin with lower forms of life.* You have no embarrassing associations in connection with the reproduction of plants by means of flowers, seed, etc., and little or none in connection with the reproduction of the lowest forms of animal life. It is always possible to express your thought or make your idea clear by talking in terms of the general principles and illustrating in terms of lower forms of life. Thus you may avoid making an issue or creating an embarrassing situation, since it is always possible that there will be others in the class or audience who have not yet acquired a sensible viewpoint. For their benefit it will be preferable for you to speak in simple terms that do not carry embarrassing associations.

*Use technical or scientific terminology.* You have noticed how easy it is to discuss your health and your personal

physical problems with your physician, speaking in terms of the utmost frankness and still having no embarrassment in doing so. This is due to the fact that you use the scientific terms which you learn from him and which lack any vulgar associations. Inasmuch as scientists are clean-minded, and inasmuch as scientific terms are not in common use by the general public, we find that scientific terms are almost completely lacking in any unpleasant or evil association. One of the benefits you can accomplish through the biology course is to acquire a suitable vocabulary of straightforward technical terms which will enable you to think and talk in a clean-minded way about all essential and important problems.

- Assignments:*
1. Do you think sex is discussed too much or too little in modern life?
  2. What gain and what loss results from the tendency to forbid discussions of sex?
  3. What good book would you recommend for your classmates to read about sex and personal hygiene?

**9. How to learn biological names.** The beginner is sometimes inclined to wonder why the scientist chooses such long and difficult names with which to describe such simple objects as the common plants and animals. He wonders why a plant with one seed leaf should be called a *monocotyledon*, and one with two seed leaves a *dicotyledon*. Furthermore, he wonders why a common ragweed should be called *ambrosia artemisia folia*. In addition to the question of why, there is also the question of how. By what methods shall such names be learned? The following may help.

*Realize the genuine necessity for an accurate terminology.* Each science has its special terminology which is very necessary, and without which it would be difficult to speak accurately. Scientific names are the same one time

as another, and are the same all over the world. They mean the same thing to everybody and are, therefore, much more accurate and precise than the common terms used in everyday speech. If a person from Idaho speaks of a ground squirrel he means a quite different animal from what his Texas friend will have in mind when he hears the term. The scientist has a different name to apply to each of the animals in question, and these names always have the same meaning wherever they are used. While, therefore, it may appear that biology is unnecessarily burdened by a mass of difficult names and technical terms, there are good reasons for them, and good reason for learning them.

*Analyze the scientific name to find any similarity to the popular one.* Thus the scientific name for a certain pine tree, *Pinus Palustris*, may be more easily remembered if you note the similarity between *Pinus* and our English word pine. With this in mind you can make the association that the name stands for Southern pine. Other similarities will be observed in connection with other names.

*Get a glossary which defines the terms.* It is possible to get a dictionary which lists the scientific terms common to a particular science and explains the meaning of each. For example, with such a glossary available, the word *gamete* may be looked up and found to be defined as follows: "A reproductive cell which ordinarily becomes functional only upon union with another." Likewise, the word *embryo* may be found defined as "The young plant within the seed."

*Look up the Latin derivations of strange terms.* Many, but not all, biological terms have been derived from either Latin or Greek. Thus we have the term *periosteum* composed of two main parts, *peri* meaning



around, and *osteum* meaning bone. The periosteum is therefore the tissue around a bone. Many otherwise difficult words become clear and meaningful when they are thus interpreted.

*Get the original popular meaning of the Latin term when there seems to be no other basis of association.* For example, the term *dendrite* is the name for one portion of a nerve cell. There seems to be no logical reason for this name, on the surface, but when you look up the word *dendrite* in Greek and find that it means "tree-like," it is easy to remember that a dendrite is a tree-like branch of a nerve cell. Many biological terms are merely popular names clothed in foreign languages.

*Use formal drill procedures in learning certain essential terms.* Some students find it desirable to write down a list of the terms and names to be memorized, with their English or popular names written on the back of the page. They then try to recall as many of the meanings as they can before having to turn the paper over to refresh the memory. Other students report the practice of underlining the technical words in the book as they come to them, and later testing themselves on all such words found in the chapter. All these procedures are simply illustrations of the point that it is often necessary to resort to formal drill methods of the same kind as you would use in memorizing any other kind of material.

*Do not treat names and terms as ends in themselves.* If you simply memorize names but do not know what they mean you accomplish little or nothing. In fact, you waste time which you had better spend on other things. A scientific name is a tool or an instrument to be used for practical ends, and is not an end in itself.

*Rank scientific terms above scientific names.* Avoid over-emphasizing the names of species at the expense of

learning the functional terms in biology. To be able to identify every plant by its technical name is not so important as to be able to describe the fundamental biological processes or phenomena in their scientific terms.

*Do not lose your ability to talk in non-technical terms.* An occasional scientific specialist becomes so absorbed in technical terminology that it is very difficult for common persons to understand him. It is important that you learn technical terms, but it is also important that you retain your ability to talk in popular terms when you are talking to a person without scientific training.

- Assignments:*
1. State all the advantages you can that are derived from having an accurate terminology in science.
  2. Apply the principles given in this section in learning the meaning of the following biological terms: cambium, chlorophyll, photosynthesis, fission.
  3. Arrange a page in your notebook in which to list biological terms whose meanings you wish to master.

### **10. How to learn the classifications of living forms.**

Scientists tell us that all forms of life are related and that they group themselves into families and species, each divided and subdivided into numerous smaller categories. One part of the work in a biology course involves learning how the forms of life relate to each other, and getting some systematic notion of the general classification scheme.

*Avoid the mere memorization of meaningless words in meaningless outlines.* To know that the monocotyledons constitute a sub-class under the angiosperms is of no service unless you know what a monocotyledon is and know the significance of the angiosperms as they are contrasted with other forms of life. In other words, learning the significance of biological names is an essential first step before you can proceed effectively in learning biological classifications.

*Get the relationships back of the classifications instead of learning the items arbitrarily.* The work of the systematic biologist has not been done at random. If he has classified a certain type of plant as a subdivision of another type, he has done so for a definite reason. If several forms are classified as a single family, they are put in that family because they have definite features of similarity which distinguish them from all other forms not in that family. The study of systematic biology, therefore, calls for a definite search for the basis of relationship, and it is hopeless if carried on any other way.

*Select some well-known plant or animal to typify each main division or subdivision.* It is much easier to learn concretely than abstractly. You can remember a family, species, or class very easily if you have at least one familiar object to represent it. Such common varieties as *asparagus*, *pæonia*, or *geranium*, may be used to fix in mind the respective larger groups of plants to which they belong.

*Practice identifying individual plants and animals.* Practice finding their places in the systematic classification scheme. Take up one after another and run through the classification, deciding which major branch it is in and going on down to the sub-branches until you find exactly where it belongs in the scheme.

*Learn the major divisions but do not try to master all the lesser subdivisions.* Biology study involves many other tasks besides merely learning classification scheme. You should spend only a limited portion of your time in this activity. Do not attempt to memorize all the classifications, but merely those which are of major importance and which will help you to remember the principles which they represent. If you take only the major divisions and a few representatives under each, you reduce

the whole to a graphic or diagrammatic form which you can visualize with little difficulty. This will prove far more useful to you in the end than if you spent hours of detailed memorizing of all the species down to the smallest and most insignificant.

- Assignments:*
1. Show as many ways as you can in which familiar animals manifest biological kinship.
  2. What fundamental differences do you find between a catfish, a canary bird, a dog, and a toad?
  3. Draw a chart or diagram of your own design to show the major divisions of living beings.
  4. What facts of classification have been of particular service to you?
  5. What advantages and what disadvantages grow out of the extended study of classifications in biology?

**11. How to make biology contribute to health.** To learn how to be healthy is one of the worthiest objectives of all education. Biology is probably more basic to health than any other science in the curriculum; yet students frequently go through a biology course and fail to make even the most obvious health applications. The following are a few suggestions which may be helpful in avoiding such an unfortunate outcome.

*Be alert for practical applications of principles learned.* Study biology as an applied science rather than merely as a pure science. Ask, in connection with facts which apparently are unrelated to health, "What can I do about this?" or "What does this mean to me?" Keep your mind open and alert, always looking for some use for what you learn.

*Emphasize function rather than structure.* There is a tremendous difference between the study of anatomy and the study of hygiene. The study of physiology lies somewhere between these two extremes, being more directly practical than anatomy and less practical than hygiene. The extreme emphasis on structure involves

simply getting acquainted with how the organism is put together; the study of physiology tells how it works; the study of hygiene tells how to take care of it and keep it in good condition. It is possible to be fairly well informed about all the bones in the body and all the muscles in the arm and still be little better off than before with regard to actual health.

*Study the life history and behavior of bacterial enemies of health in order to be able to resist them.* The slogan, "Know your enemy in order to defeat him," applies very definitely to the study of bacteriology. If you know how germs grow and multiply, how they spread, and the methods by which they can be controlled, you have the first principles of practical sanitation and health. Not all health difficulties are due to germs, but a very large percentage of them are, and a large percentage of them will be solved if you acquire a practical working knowledge of the science of bacteriology.

*Take up particular health problems and seek their biological explanations.* Pursue the subject from the concrete to the abstract, or from practical problems to the theoretical science back of them, instead of starting with the theoretical facts and hoping for applications to come later. If you take up the question, "What causes a cold and how may it be prevented?" your biological study in answering it will be distinctly practical and of an applied nature. On the other hand, you could study some of the theoretical principles underlying the prevention of colds without discovering those applications at all.

*Note similarities between lower forms and human beings.* The same principles of growth, development, and health apply to practically all living things, whether animal or human. Man is an animal, and man's processes and life problems are very closely parallel to those of the lower

many different specimens as you can on as many different levels in the scale of complexity or development as possible, in order better to appreciate what is peculiar to each and what they all have in common.

*Study some forms that are closely related to man.* All life is related to man and can shed much light on human problems. The higher forms, however, have more lessons to contribute than the lower forms. If you have studied the amoebae, the worms, the insects, and the amphibia, you can apply much of your knowledge in thinking about human problems. But the gap between frog and man may be entirely too big for your imagination, and you will see more in common between the frog and man if you study some form of life which is higher up than the frog. Observations and dissections of such higher animals as the rabbit or the cat will provide a much closer parallel and will help you to capitalize upon the observations you have made lower down in the scale of life. It is very unfortunate if you fail to clinch the results of your study by bridging this gap.

*Study the habits of primitive peoples who lived more like lower animals than we do.* The science of anthropology is closely related to biology and will help you to get more out of biology. Anthropology deals with the study of primitive peoples and their manners, customs, and modes of life. When you study man on this level, you study him more as an animal and without many of the superficial and artificial results of civilization. Just as the study of some of the mammals helps you to bridge the gap between humans and the much lower forms, so the study of primitive man helps you to bridge the gap between civilized man and the higher mammals.

*Look for functional parallels as well as structural ones.* A few forms of life may be quite similar as to functions



performed, even though they are very different structurally. For example, there are animals which have the skeleton on the outside and others with it on the inside, as typified by the crawfish and the rabbit, respectively. Structurally the two seem to be very different, but functionally the skeleton performs the same purpose in one as in the other. In the case of animal with an outside skeleton, the muscles are attached inside of it and are completely encased by it. In the higher forms, however, the skeleton, being inside, serves as a framework upon which and around which the muscles are attached. Similarly, we note functional parallels between plants and animals, where there seems to be little structural resemblance, by comparing the method by which plants absorb food through their roots with the method by which animals assimilate and absorb nourishment into the blood stream through the walls of the intestines. The physical principle of osmosis is basic in each case.

*Distinguish between essential aspects of structure and such minor elements as size and shape.* Two forms may really be very much the same in all essentials, and yet quite different in outward appearance. Take, for example, the neck of the giraffe and the neck of the human being. They appear to be very different and yet in reality the only difference is that the giraffe has very much elongated vertebrae, whereas those of man are exceedingly short. Likewise, the front legs of the giraffe are very long, and yet built on the same basic plan as the arms of the human being. The head of a horse and the head of a human being look very different, and yet by analyzing the bones we find that there are the same number of bones and they are put together in the same general way. They have merely been modified into slightly different patterns through a long proc-

animals which you study in the laboratory. The more completely you study these parallels and analogies between animal and human, or between plant and animal, the better you are able to make practical application to your own health problems.

*Cultivate out-of-door biological interests and activities.* If through your study of zoology and botany you become interested in the birds, trees, and flowers, and enjoy taking hikes and going for walks in the woods or along the streams, you thereby cultivate interests which may function all the rest of your life. These may contribute tremendously to the fostering of health and physical fitness.

*Learn the methods of the scientists in biological and medical research.* This will enable you to cooperate with them better and put their findings to use in your own life. The science of biology has made a tremendous contribution to the prevention and control of disease. The biologist and the medical research worker apply the scientific method in their quest for solutions of health problems. If you understand how these experts work, and know the principles underlying their experimentation, you are in a much better position to put their findings to practical use in your own daily life. Many of the health fads and health superstitions which are abroad in the world today could not thrive nearly so well if the average citizen were a little better informed about the scientific basis of biology and of medical science.

- Assignments:* 1. Make a list of the health problems or health evils of the present day which would clear up if biology were more generally studied.
2. What specific health problems has your knowledge of biology helped you to solve?
  3. What facts of biology have proved most helpful to you?

4. If a relative of yours were threatened with a serious disease what biological studies would you suggest for him?
5. What faults of study technique prevent biology from being of more service to students?

**12. How to see parallels between lower and higher forms of life.** It is customary for man to think of himself as being superior to the lower animals, as being distinctly different and set apart from them. This conception of life is very erroneous. Man has very much in common with both plants and animals. Lower forms of life simply serve as a mirror in which human life is reflected. The following are a few suggestions on how to get more out of this comparative study of forms of life.

*Make comparisons between plants and animals.* In studying some of the lower stages of one-celled life, and even of many-celled life, it is difficult to determine whether a given specimen is an animal or a plant. We have animal forms which are absolutely stationary and plant forms which are movable; it is very difficult to draw a hard and fast line that will distinguish in every case between them. Furthermore, the parallels are so close that we have many things to learn from plants about assimilation of food, adaptation to environment, and reproduction, and other topics. We should get rid of the idea at once that the study of botany or the science of plant life has little or nothing to do with human health and human problems.

*Study a large number of different forms for their similarities and differences.* The difference between the insect, the crawfish, and the frog, will become more apparent when these are studied in relation to the one-celled animal, the worm, the bird, and the mammal. In taking a course in biology you should try to get acquainted with as

ess of biological development. The foot of the horse, for example, would appear to be quite different from the human foot, and yet on observation, we discover that the horse's hoof is comparable to the human finger nail or toe nail, and that the other fingers or toes have become dwarfed so that they do not reach the ground and to all outward appearances do not exist. There is a big difference, therefore, between structures in the biological sense and forms or shapes as they appear to the biologically untrained person.

*Observe and compare forms while they are functioning normally as well as under conditions of dissection.* Not all of the parallels or similarities between lower forms of life and human beings are observable under conditions of dissection in the laboratory. There are parallels of structure as well as parallels of life habits. It is possible to compare lower animals and human beings as regards the way they breathe, sleep, make sounds, act clannish, manifest sociability, adjust themselves to new conditions, and in a number of other ways.

*Make observations of living specimens of higher animals while they are under the influence of ether.* A very illuminating and worth-while type of comparison between lower forms of life and human beings is that in which you observe the internal organs of a frog, guinea pig, cat, or other animal, while that animal is under the influence of ether. It is possible to observe the beating of the heart, the circulation of the blood, the rhythmic movements of the intestines, and the numerous other internal processes that are closely similar to those of human beings. This type of observation and the necessary dissection which goes with it is ordinarily spoken of as vivisection, but is distinctly different from what the popular mind understands by vivisection. It does

not involve cutting on a live animal while it is conscious or subject to pain. The animal that is so operated upon can be killed before it recovers from the influence of ether, and thus any semblance of torture or cruelty may be avoided.

*Assignments:* 1. Justify the common emphasis on lower forms of life in biology courses.

2. List as many parallels as you can between lower forms of life and human beings.

3. In what sense is man higher than the other animals or the plants?

4. Name five life processes which are carried on in essentially the same way by plants as by animals.

**13. How to acquire a love for living forms.** You should get more out of an elementary course in biology than mere information or understanding of scientific principles. You should try to develop a love for nature, and a sympathetic understanding and appreciation of life in whatever form you find it. The following suggestions may help you in achieving this outcome.

*Learn more about the different plants and animals.* The right kind of information about living beings should help you to love and appreciate them more. "A primrose by the river's brim, a yellow primrose was to him, and it was nothing more," illustrates the point we have in mind. If you know nothing about a primrose, there is nothing in it to love; but as your understanding of it deepens, the possibility of appreciation increases also. This is illustrated by the lines from the poem about the flower in the crannied wall: "If I could know what you are, root and all, and all in all, then I should know what God and man is."

*Expose yourself to contacts with nature.* You do not become a nature lover by sitting in your home or in the classroom and studying about plants and animals. This

goal is accomplished best by getting out and making actual contacts with nature. Taking hikes or field trips through the meadows, woods, and prairies, or going on picnics to the mountains or the seashore, provides a necessary contact with living things, and paves the way for a better appreciation of them.

*Get a close-up view of wild creatures.* There is a tremendous difference between your attitude toward a bird as he sits on a limb while you throw rocks at him, and your attitude when you find him in your hands after you have wounded and caught him. When you have such a helpless creature in your possession, and can feel the rapid beating of his heart, and the trembling of all his muscles due to the fear which you have aroused in him, and can see the frightened and possibly painful expression in his eyes, you realize much more quickly what a cowardly thing it is to take advantage of a helpless creature which is doing its best to live its life in an innocent way, and is doing you no harm.

*Band together with other lovers of nature.* Seek the companionship of class members or fellow students who are interested in the great outdoors. Go with them on tours of discovery or on biological expeditions. The organization of nature clubs in connection with science courses has proved to be quite interesting and valuable in many ways, among which is the service they render in helping to develop a love for living forms.

*Learn to identify the forms which you see.* A plant or an animal has more meaning and significance to you if you can call its name. A mere bird may take on new meaning when you learn that it is a thrush, a robin, or a jay. The mere memorizing of large numbers of names of plants and animals as an end in itself is, of course, questionable, but learning to identify these forms by



their names has possibilities in it in just the same way that knowing your friends by name helps you to cultivate their friendship.

*Read nature literature.* There are numbers of good books and magazines which deal with nature in such a way as to build appreciation. There are stories about dogs who were faithful to their masters, or who gave their lives for people in distress. There are stories about wild things in their struggles for existence against their enemies. Such stories are very interesting to read and help to develop an appreciation of the various forms of life. Such a piece of literature as Longfellow's *Hiawatha*, for instance, helps to create a sympathetic attitude toward the animals of the woods and forest, particularly since Hiawatha himself was a nature lover and called all the animals his friends. Even though such materials may be classed as literature rather than biology, at the same time they help you to develop a love for nature.

*Help to conserve harmless wild life.* We are told that the passenger pigeon, which once migrated over our country in such flocks that the sun was obscured from view, is practically extinct because of the depredations of hunters. Similarly, the deer, buffalo, and many of our most charming game birds are practically in the last stages of disappearance from the face of the earth. Enlist yourself in the cause of conservation of wild life. Not only refrain from destroying these harmless creatures, but also enter into a positive program of helping to influence others to be more considerate. You will not only find yourself more of a nature lover, but you will have more of the interesting living forms left in your neighborhood for later generations to love.

*Assignments:* 1. In what way does knowledge about nature contribute to the love of it?

2. Report the titles of books which you can recommend as being particularly good to encourage a love and appreciation of nature.
3. What specific things can you do to show your love and appreciation of the wild life of your community?
4. What kind of nature lovers' club would you suggest for your school and what activities would you recommend that it attempt?
5. Justify the statement that a nature lover is likely to be a good citizen.

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## CHAPTER VII

### HISTORY

*"History is the mighty tower of experience  
which time has built amidst the endless fields of  
bygone days."*

HENDRICK VAN LOON.

History is commonly spoken of as a social study, because it is concerned with men, nations, and the progress of civilization. It is the story of what the world has experienced up to the present, and is rich in its possible contributions to present-day problems. In this chapter we shall consider methods of studying it more effectively, reserving for the next chapter the treatment of study techniques for the other social studies, including economics, sociology, and citizenship.

**1. How to reduce the proportion of routine memory work.** Of all the subjects in the high school curriculum, history has probably suffered more than any other from the over-use of routine memorizing as the method by which it has been studied. There has been a tendency to over-burden it with names and dates and events. These were memorized in a routine or mechanical way, with little connection, association, relationship, or reason involved. In so far as you can, you should try to introduce the elements of reasoning, problem-solving, imagination, and appreciation of the story itself, instead of this routine memory work. In the paragraphs which follow we shall consider a few ways by which this may be accomplished.

*Judge the worth of different items and memorize only*

*those that are important.* Some items may be so important as to deserve to be learned thoroughly, while others should be learned only well enough that you can recognize them when they are later brought to your attention. Still others probably deserve no status at all in your memory. Certainly all events are not of the same importance; if you try to remember everything, you make of your mind simply an ash heap or a rubbish pile. It will be difficult for you to find anything useful when you do need it.

*Treat dates as of minor importance.* Probably there has been more abuse of the memorizing method in connection with dates than with any other single phase of the subject. Some students put so much emphasis on dates that they sometimes have several hundred different ones to keep in their minds. This requires so much of their time and energy that very little is left for genuine study.

*Group the items to be learned instead of memorizing them singly.* The part of history that really deserves to be memorized can be learned better if you build your knowledge around key persons, key events, key periods, key dates, or key topics. The value of what you know is dependent upon the number and kind of associations which you have between the different items. What you memorize, therefore, should be organized, grouped, or associated, rather than fixed in your mind as isolated bits.

*Do extensive reading for enjoyment and experience.* Instead of studying one book intensively, someone has suggested that you should read so many that you cannot memorize them all. Read historical novels, good biographies, and other historical treatments on a large scale. Spend quite a bit of your time in reading on week ends. You will acquire a great deal of historical

information in a very pleasant and enjoyable way that is far removed from routine memorizing. The extensive reading of many history books is less subject to the memorizing danger than is the intensive study of a single text.

*Read history for the story.* The element of sequence or connection in historical events can be grasped and appreciated more effectively if you simply read straight through for the interest and enjoyment of the story instead of stopping and trying to make note of everything that is recorded there. Just as it would be possible for you to spoil the pleasure of an automobile ride through an interesting or scenic portion of the country by making too many stops to fix in mind all the details, so you can kill the joy of history and also deprive it of most of its worth by carrying on your study in a slow and tedious manner. The large current, or the major movement, is overlooked while you study the minor details.

- Assignments:* 1. How does the history which you have studied compare with your other subjects as to amount of memory?
2. What ought to be memorized in studying history?
  3. What ways can you suggest for studying history besides memorizing?
  4. Make a list of the interesting historical novels which you have enjoyed reading and which you would recommend to others.

**2. How to reconstruct the past with vividness, reality, and accuracy.** How to make the past seem real is one of the big problems in the study of history. To most of us the events of long ago are in a different world and subject to a different system of thinking than the events of today. Persons like George Washington, Abraham Lincoln, or Julius Caesar tend to take on unusual physical proportions and to stand apart from all ordinary men whom we know today. The following are a few suggestions on how to get the elements of

vividness, reality, and accuracy into your imagery of the men and events of the past.

*Help collect a school historical museum.* With a little effort on the part of all members of a class it is possible to assemble quite a collection of relics, souvenirs, objects of historical interest, or other fragments from the past, which have been preserved in the homes of the students. When these are brought to the schoolroom where they can be seen by others, they help make the past seem real and bring it down nearer to the level of the times in which we live.

*Collect pictures in which various artists have given their ideas of persons and events of the past.* Unfortunately, the art of photography is a very recent invention and we do not have actual photographs of events very far back. We do have a few paintings, however, in which artists of previous periods have represented what they conceived to be the true account of historical events. We also have portraits, statues, and busts representing the great historical characters. Many of these may be somewhat imaginative and may have a tendency to glorify, exalt, or present the person in too favorable a light; yet, if you collect and compare a number of them you will probably get a much more accurate view of the situation than you would otherwise.

*Go to museums and view actual remains of the past.* Most of the larger cities have museums in which are assembled various relics of the civilizations of former times. Here you have access to quite a variety of interesting and educative souvenirs. A few visits to such a museum will amply repay you for your time and trouble.

*Study source materials, or original documents.* The tendency to base history courses upon a certain amount



of actual study of original documents, particularly in more advanced classes, seems to be valuable. Books are now available in which these famous historical documents have been copied and made much more accessible. For example, we may mention such a work as Hart's *Contemporaries*, which contains copies of memoirs, diaries, and letters written by people who lived at the time of the events which they describe. They make those events seem much more real, and probably present them more accurately than the average text because of the additional detail.

*Attend motion picture shows describing historical events.* The use of historical themes in motion picture production is very common, and some of these historical movies are quite valuable. While it is true that for reasons of interest and popular sale the producers sometimes take liberties with the historical facts, this element is probably no greater in historical movies than in historical fiction. Usually the account is true in spirit, even though it may not be true or accurate in detail. Mention should be made in this connection of the "Chronicles of America," a series of historical motion pictures put out under the sponsorship of Yale University Press. These pictures are supposed to be unusually accurate and dependable.

*Read biographies to get close-up glimpses of great men.* A sense of reality and vividness in connection with men is gained by reading biographies. When you read three or four hundred pages on the life of a great character, following him in the personal details of his life as well as in the major events of his public career, you come to know him much more thoroughly as a man. History students should be encouraged to read a great deal more biography than they usually do.

*Read general literature which has a setting in the historical period studied.* The reading of general fiction and books written for the popular reader has a great deal to offer for anyone with an historical interest. Sir Walter Scott's novels dealing with the Crusades, for example, give a more vivid and real picture of the crusade movement than the average student will get from the most accurate and precise account of the major events as they are recorded in any single history textbook. The reason is that Scott has taken the liberty to bring in a vast amount of detail which history textbooks could not include.

*Get descriptions of historical events from several different sources rather than from a single textbook.* A number of different photographs will help you to identify a person whom you have never seen before better than a single one would. Likewise, the descriptions of a given event as presented by several different authors will enable you to see that event from several angles, each of which supplements the others. For vividness and reality in history, extensive reading from many sources is decidedly preferable to intensive analysis of a single textbook.

*Do some kind of creative work to represent concretely what you read.* In order to crystallize your ideas and perfect your imagery of historical events, it is advantageous to resort to some kind of creative or constructive work. We shall illustrate a few types. You may help to write a contemporary newspaper representing a typical day in Rome or Athens, with each student in the class contributing an article or two as if he had been a reporter in one of these cities. You may write the diary of some historical person, using the words and style you think he would have used if he had actually been writing

about his doings at that time. You may write a short story or essay describing some historical event, presenting the characters as you think they would have acted in the situation in which you know them to have lived. You may participate in a dramatization of an historical event in which various members of the class take the parts of different characters and represent such events as the landing of Columbus or the signing of the Declaration of Independence. You may carve out of soap miniature representations of such historical items as a feudal castle or a Spanish mission. You may draw cartoons, charts, diagrams, or pictures representing historical concepts or situations.

*Take sides instead of following great historical struggles merely as a disinterested spectator.* You get greater vividness and reality of experience when you follow such a movement as the Punic Wars by actually being a sympathizer of Hannibal, trying to help him overrun the Roman Empire. Or, later, in reading about the Roman side of the question, you may identify yourself with Scipio and his army and become an enthusiastic Roman sympathizer. Just as you get more interest and enjoyment out of a great football game if you are rooting for one side or the other, so you become more thoroughly absorbed in the current of a great historical event if you definitely take sides. In order to get the element of accuracy and avoid the distortion of historical events, it may be well to read on both sides of these major struggles so that what you get from one book may later be counteracted or neutralized by what you get from another.

- Assignments:* 1. Report incidents in which your imagination of historical events was very incorrect and tell what later set you right.  
2. Report such historical events or persons as stand out most vividly

and accurately in your mind and explain the reason for this vividness.

3. What has helped most to make the past seem real to you?
4. What specific objects, pictures, or other concrete materials can you furnish the history classes?

**3. How to locate men or events properly with respect to time.** The question of dates, sequence, or chronological arrangement of historical facts gives many history students a great deal of trouble. Some spend practically their whole time trying to learn dates. Others misapply their efforts in such a way that they have their historical information all mixed up, and have little idea whether Charlemagne came before the American Revolution or afterwards. The following are some suggestions bearing upon the problem of arranging men and events in their proper places in time.

*Avoid overemphasis on the learning of dates.* The mere memorization of dates has little to justify it. Dates, as such, are worth very little after they are learned. It is much more important to know what caused events than to know at what time they took place. It is more important to know what a man did than to know what time he lived or when he died. Dates should be kept in the classification of servants rather than masters, or means rather than ends.

*Associate dates with the men or events for which they stand.* If you learn a date, you should learn it as the time at which something in particular took place. You can learn a date and an event more easily than you can learn a date by itself. If you really know a man, or have the true spirit of a given historical movement, you easily associate it with the period of time when it occurred, because that man or event would be out of place and out of harmony with any other period in history.

*Associate men and events with other men and events and not with their dates only.* It is well to form many cross connections between what you learn in history, instead of learning each item in connection with its time element only. Let us illustrate. The writer asked one of his graduate classes to give the date of the Louisiana Purchase. They did so correctly and without difficulty of recall. He then asked what was going on in Europe at that time that had any connection with the Louisiana Purchase, and very few had any idea. He next asked what was the date of the French Revolution, and the date of the Napoleonic wars. He found that many of the students could give these correctly. With this refreshing of their memories they could immediately say what they failed to say before, that the Napoleonic wars and Napoleon's need of money, coupled with his inability to defend Louisiana, caused him to sell it to the United States. The point is that Napoleon's wars and the Louisiana Purchase had both been associated with their proper periods in time but that the associations which had been built up between the two events themselves were so meager that they had failed to function.

*Locate items within their epochs but not necessarily by exact years.* There is much to justify the learning of approximate dates. For many purposes it is just as well to be able to locate a man or event in the latter half of a century, or possibly in the latter quarter of a century, as to give the exact year. It makes little difference whether the Norman Conquest took place in 1066 or 1067. For all practical purposes it is just as well to know that it took place some time in the eleventh century. It is possible to divide the whole period of history into epochs or major periods and then locate each item in its proper period, with the exception, possibly,

of a few cases where a more exact identification is desirable.

*Relate several items to a single key date, key man, or key event.* A policy which many students report as being very helpful consists of setting up a small number of very important facts and then fastening a large number of individual dates or events to those. For example, picking out such a man as Napoleon may serve to organize a vast fund of European history in which you count up to and down from his time, remembering that each man or event belongs somewhat before or somewhat after Napoleon's time. Another landmark of a little later period might be Bismarck, and the World War might serve as the next landmark in the series. It is possible in this manner to associate practically all the major historical information with about a dozen or possibly twenty outstanding landmarks, and thus have all of them mean more to you than they would if you tried to learn them individually.

*Make a time chart or graph in which you visualize the sequence of events and men.* Some students report the device of drawing a long line on a strip of paper, graduated by years or decades, and then writing the events or men that are to be learned beside this line. One student arranged such a strip for the entire period of history in such a manner that it could be rolled from one cylinder to another, thus reviewing the whole sequence of history from the beginning up to the present time in very much the same order as it actually happened. It would be possible, of course, to make such a device as this a purely formal memory scheme rather than one to aid the understanding or the appreciation of the significance of the events, but it has valuable possibilities if used wisely.



*Organize separate series for men or events of different types rather than putting them all into one series.* There is much to be said in favor of studying history topically, rather than chronologically. By this we mean taking up one phase of history and organizing all the events or men that are involved in that phase in one series. You may represent one phase of history on one time chart such as was mentioned in the preceding paragraph, and another phase on a different one. Thus in the study of American history, one topic or series might be the question of slavery, another might be the tariff, a third the Western movement, a fourth the development of communication and transportation, and so on. There is, of course, the possibility that the items in one series may fail to be associated with items in another. As a corrective for this you might do well to place these series side by side occasionally and make horizontal cross connections in order to be sure that you see how the slavery question at any particular time was related to the events in tariff history at that time.

*Skip about in the time series as you study so that you get a sharper contrast between different periods.* It is not wise to study all history by beginning at the beginning and coming straight down through the periods of time in regular order. You may fail to get the full force of the contrast between different periods or epochs if you do so. It may be well in reading biographies to read the life of a man in ancient time and then the life of a man in more modern times. By skipping back and forth, going suddenly from one period to another, you have a better chance to observe the differences between the civilizations and viewpoints of men in different ages of society. You may compare this to your experience when sitting in a room with the temperature gradually rising.

You fail to notice the change because it is so gradual. If, however, you move from one room into another in which the temperature is several degrees higher, you note the change immediately, and you appreciate it also when you go back into the cooler room.

*Study history backward.* A movement is now under way to begin the study of history with the present time and go back, as contrasted with starting with the past and coming up to the present. We might call this the current-events approach. Thus a good way to study Mexican history might be to begin with some current Mexican revolution and trace its development as related to previous revolutionary history in Mexico. Similarly, one teacher at the time the Graf Zeppelin was first in America began with that event and went back from it to the study of Columbus's voyage.

*Assignments:* 1. Make a list of the arguments for and against the use of dates as aids to learning history.

2. What dates do you consider worth learning and why?

3. Arrange a series of a dozen key dates which you think would serve best to organize the events of world history.

4. What justification can you state for studying events out of their regular time order?

**4. How to learn causes and effects.** The great movements of history did not "just happen." They were not simply due to chance. Every major movement or historical occurrence has been due to some cause, or possibly to many causes, rather than to mere whim, luck, or chance. The study of history should be a study involving judgment and reasoning rather than mere memorizing. It should be an attempt to understand why rather than to learn what. The following paragraphs give methods by which this causal element may be introduced into history study.

*Beware of attributing too much to a single cause.* His-

tory is due to a network of causes, with numbers of forces working together at cross purposes. For any major historical occurrence there are numbers of causes rather than a single one. It is often possible to pick out one or two major operating factors that were of greater importance than others, but there is grave danger of trying to make the study of historical causes too simple.

*Avoid confusing correlation with causation.* The mere fact that two events happened together does not prove that they were causally connected. Either one may have caused the other or they may both have been caused by some third factor. Or they may each have been caused by separate factors, so that even though they did appear together, they were utterly unconnected with regard to causes. Another common mistake is that of assuming causal connections because one event came after another. The mere fact that one event occurred later does not at all mean that it was caused by the previous one, or that there is any relation whatever between them.

*Distinguish between men as causes and as mere tools or agents of more fundamental forces.* In order to understand causes and effects in history, you must recognize that widespread irritations or dissatisfactions frequently become current among an entire population. These pave the way for great social upheavals. Under such conditions the people appoint leaders to represent them, or else men come forward and put into action the desires of the masses. The man is, therefore, in many cases simply the product rather than the cause of a fundamental movement. Many of the great movements of history were not due to the men who led them; the men were due to the great movements upon which they capitalized.

*Look beneath the surface and do not accept as real the causes which people gave for their actions.* It is common for the people and even the leaders themselves to be deceived as to their motives. They think they are actuated by one desire when, in reality, their underlying motive is quite different. To many people, the World War was due to the murder of an archduke, when in reality the archduke's murder was merely the match that lighted the fire that had been made ready by much more fundamental factors. A basic trait of human nature is what the psychologists call the tendency to rationalize. By this we mean finding excuses or pretexts for doing things which we want to do. It is a form of self-deception and is extremely common. James Harvey Robinson, in his book *The Mind in the Making*, has pointed out that the vast majority of fundamental historical movements have been accompanied by this rationalization, and that most historical events are due to more fundamental causes than the people realize or will acknowledge.

*Study history for its social principles as well as for its facts.* Historical facts, like scientific facts, group themselves together into types and classes. If you study a number of facts critically, it is often possible to observe the unifying principle that is represented in them all. Thus you arrive at a social law or generalization which may be used in studying other facts. Unless such generalizations are built up, every fact is likely to stand alone, and it will be very difficult for you to get a thoughtful or rational interpretation of historical events. A great aid to the interpretation of history is the study of the social sciences, including economics, sociology, and political science.

*Compare past events with those of the present.* The ex-

planation and interpretation of previous historical occurrences is aided if you draw parallels between them and similar phenomena that are occurring in the world today. In doing this, it is often very important that you allow for changed conditions, or the introduction of new elements into the present situation that did not exist in the past. The comparison, however, will ordinarily shed light upon the events which you are trying to explain.

*Begin with present conditions and make all history study a quest for root causes.* The advice which was given at an earlier place to study history backward is also pertinent to the present problem. If you begin with the present and try to explain events in terms of their origins and historical roots, everything you learn in history will be of causal significance. Thus, if you try to explain why we had the World War, you are taken back to events in European history immediately preceding the World War, then back to the War of 1870, the Napoleonic Wars, the Hundred Years War, Charlemagne, and the Roman Empire. Take as your aim in history the explanation of present society, or the rational interpretation of the world as we know it today. Set about to find the explanations of those things in the world today which are not clear, and all of your history study will be distinctly causal. While it is true that you cannot do this in every class on account of the way the course is offered or the way the textbook is written, still it is a thing that any student can do in large measure if he is really interested in the present condition of the world and desires to know how it came to be.

- Assignments:* 1. Explain why the study of historical causes is so frequently neglected.
2. Criticize the statement that history is not a social science unless it emphasizes causes.

3. Justify the backward approach to history as a good way to understand causes.
4. How would you go about studying the causes of the World War?

**5. How to distinguish between the main current and the minor eddies in the stream of history.** Many students seem to think that history consists merely of a jumbled and unorganized mass without basic principles or relationships. Everything is of about equal importance to them and they cannot judge the general direction of the current as a whole because of looking too intently at the several little parts, each of which seems to be going in a different direction. Below are a few suggestions on methods of remedying this situation.

*Take general history courses in preference to those dealing with particular periods or countries.* If you have one year's time to spend in the study of history, take a course in world history. It will give a better sense of perspective and will unify the whole stream better than will a course, for instance, in the Renaissance and Reformation period, or a course in American history from Andrew Jackson to the Civil War. Students often make the mistake of enrolling in a course in history that deals with some special country or some special period before they have had a general survey course in world history, or even in United States history. In many of these cases it is practically certain that they will not be able to take enough different history courses to fill up the gaps, or to round out the complete picture. A course devoted to the whole of history is better than one devoted to a tiny part, since it gives you a sense of perspective. This is particularly true if your study of one or two parts causes you to neglect to take up any of the other parts at all.

*Read condensed or brief editions of history books.* For



purposes of getting a broad view, or the main drift of historical events, it is better to get a little, brief, or short book that summarizes the whole in a relatively few pages than to study a big book which treats the events on a larger scale. This may be compared to getting a visual idea of the map of a continent. The map of North America drawn on a scale ten feet square represents so much detail that as you stand before it you have difficulty in getting any clear idea of the construction of the whole continent. On the other hand, a map on a scale six inches square necessarily leaves out the minor elements and you get the broader outlines much more clearly than you do in the big map. The same thing is true in studying history.

*Skim over a book to note its large divisions.* Skimming is better than reading, for purposes of getting the big perspective of history. A thirty-minute period may well be devoted to looking through the table of contents and turning the pages to get an idea of what the whole thing is like. You may then start studying the chapters in detail with greater profit. A similar process of skimming at intervals through the book for purposes of taking stock of what you have read, and looking forward to see what is coming next, will give you a fine sense of perspective.

*Read by wholesale rather than by retail units.* One reason why students so often fail to get perspective in history is that they study a few pages each day and thus let the course as a whole drag over such a long period that the connection between the first and last parts is lost. Let us illustrate in connection with Biblical history. Most of us who have attended Sunday School for a good portion of our lives have read the life of Christ and have studied the various episodes in it Sunday by Sunday, so

that we have gained quite a familiarity with such incidents as His turning water into wine, bringing Lazarus back to life, and the Crucifixion. It is very interesting to note, however, that after having studied all these details in the Sunday School fashion, or as we might say, in retail units, few of us can start at the beginning of Christ's life and narrate the main outline of His career in proper order or sequence. To correct this, we might recommend a Sunday afternoon devoted to reading the life of Christ as presented in one of the four Gospels. This can be done in two or three hours and will prove a revelation to the average Sunday School student because of the remarkable way in which it knits together events which previously were known only as isolated bits. This type of reading we might describe as reading in wholesale units. The principle of it applies in the study of all history, just as truly as it does in the study of the life of Christ.

*Make a brief synoptic outline of events and movements.* A very helpful, even if a bit formal, method of studying history to get the perspective consists of making an outline of the high points of what you read. There is no special virtue in it as regards providing a master key, nor in yielding a revelation in some mysterious way. It does, however, direct your attention to the distinction between what is of major and what is of minor importance. When you try to group events into heads and subheads, and to condense much into small space, you are forced to leave out many things. In doing so you are forced to make up your own mind as to what is important and what is not.

*Do not ignore the minor eddies, as they help to give meaning to the main stream.* What has been said in favor of trying to learn history in perspective should not be

taken as an indication that the items of minor importance should be neglected or omitted. The details are what make history interesting. The personal glimpses into the lives of men, and the close-up views of fundamental movements in historical struggles, may be compared to the juice and flesh of the apple, whereas the main points are like the core, a bit unappetizing and indigestible. A good way to study history is to row your boat into one of the minor eddies and dwell there long enough to become thoroughly identified with it. When you read biography or historical fiction you pay less attention to the main current and you get more of the personal details or glimpses which make history enjoyable and readable. It is well to get as many of these as possible. In many ways they have more to offer than the main movements themselves, particularly if you do not completely lose sight of the bigger things as you become engrossed in the smaller ones.

*Assignments:* 1. Give all the arguments you can in favor of studying general history or world history instead of courses about the particular countries or periods.

2. Give all the advantages and disadvantages of studying a very complete detailed history book as contrasted with a condensed outline.
3. What is your estimate of the value of making an outline as you study a history text?
4. Illustrate from your past experiences a few historical events the importance of which you greatly exaggerated or seriously underestimated, and tell how you later came to evaluate them properly.

**6. How to correlate history and geography.** History and geography are so closely related that it is very difficult to separate one from the other. Take, for example, the present political map of Europe as compared with that before the World War. Note how much the present-day map owes to that particular historical event. Or look at it the other way and you will see that the World War itself was in large measure a result of geog-

raphy. Geographical limitations on the freedom of the German people, as expressed by their desire for a place in the sun, are only one illustration of this. The Rhine River valley, which is one geographical unit, has been shared for decades by Germany and France, separate political units, a fact which naturally leads to friction and war. These illustrations are given to show that the subjects of geography and history are very intimately connected. The following are a few suggestions on how to study history so as to establish the desired relations and get the desired benefits from the field of geography.

*Read history with a map at hand.* This will help you to picture mentally the scenes of action for historical events. It is almost impossible to get a clear idea of the viewpoints and attitudes of the various peoples during the World War, for example, without having a map to see how these peoples were located with respect to each other. It is very difficult even to get a clear idea of the progress of the war, or of the nature of the strategy employed in the fighting unless you have a map to provide the necessary mental imagery.

*Fill in outline maps to represent historical situations.* The device of using outline maps as laboratory work in connection with history has splendid possibilities. The mere act of coloring a map of Europe according to the political alignments of the various countries helps you to crystallize your ideas and make your knowledge definite. Likewise, maps which you fill in to represent the status of slavery in the United States, for example, serve a similar useful purpose.

*Inform yourself regarding the geographical factors which influence people and events.* To a very large extent history is the result of physical or physiographical forces. Climate, coastline, fertility of soil, topography, mineral re-

sources, oil deposits, and innumerable other factors, constitute a background upon which the picture of historical events is painted. Without this knowledge of physical geography, it is difficult to think of history in really fundamental terms.

*Look for the human or psychological element in geography rather than merely the physical or place element.* Geographic forces may be classified as physical and psychological. The occupations of the people, their general level of education, their religious ideas and viewpoints, their moral standards, their ambitions, their peaceful or militaristic tendencies, their social institutions, their economic systems, are all elements in social geography. Geography was formerly classified as one of the natural sciences because the emphasis was placed mainly on the physical features. In recent years, however, it has been changed to a social science because we have begun to realize that these social factors are more important in shaping human institutions and historical movements, and in determining the course of civilization. For this reason, if you wish to understand history, you should strive by every means possible to get a clear picture of the daily lives, manners, customs, and viewpoints of the people.

*Assignments:* 1. Discuss the values of correlating geography and history study.

2. Which of these two subjects contributes more to the understanding of the other?
3. Cite specific cases in which your knowledge of geography has helped you interpret history and in which your knowledge of history has helped you to understand geography.
4. What use do you actually make of maps in studying history?

**7. How to make the past yield valuable guidance for the present and future.** History is supposed to repeat itself, and therefore to be of service as a guide to

present-day action. It is supposed to be rich in lessons for present-day citizenship, and it may become an inspiration for individual lives. The following suggestions are offered in order to help bring about more of these possible advantages from the study of history.

*Put emphasis on the phases of history which have modern counterparts.* The Macedonian phalanx, or the military strategies of Roman armies, would hardly be classed as of very great importance in terms of possible lessons for the present when compared with the methods of government or the social organization of the Greeks and the Romans. If you wish to get the most out of history for present-day use, put the major emphasis on those phases which have the most relation to the present.

*Read biography for personal inspiration and guidance.* A great hero is more capable of imitation than is a battle, a military campaign, or a social revolution. For personal inspiration and guidance, therefore, read biography. Trace the life of some great man from his humble beginnings to his peak of greatness, and possibly to his decline. Note his mistakes as well as his unusual accomplishments.

*Put emphasis on the present rather than on the past.* If you wish to get the most from history for the guidance of the present, start with the present as your center of emphasis instead of with the past. Take up some issue that is before the public today and hunt through history for a similar case that will shed light on it. The same amount of effort devoted to searching for parallels between the past and the present will yield greater returns if you begin with the present and do the searching in the past, than if you begin with the past and do the searching in the present.

*Extract from the past its universal principles.* Events of



the past are seldom repeated exactly in the present, but the principles which underlie them, or the fundamental generalizations which they represent, may be applicable at all times and in all places. Some of our better historians had analyzed previous wars and international complications so thoroughly before the World War that they had predicted the line-up of nations with almost uncanny accuracy. In other words, they had extracted from the past the fundamental principles of national behavior so well that they were very exact in making their applications to the present.

*Do not trust history to repeat itself in detail or in any definitely predictable way.* One type of superstition that is prevalent in the world today, is that which tries to predict the future by the past according to some mechanical formula, or in a blind and rigid way. There are weather prophets who expect showers and blizzards to follow patterns that were represented in the weather thirty-three years ago, or for some other similar period. Their predictions, of course, are no better than chance. Similarly, there are some who expect financial crises, wars, and revolutions in the present to work out according to the same patterns as in the past. The fact is, however, that history never repeats itself in detail, because there are always new elements which did not exist in the previous times. The fact that a present situation may be quite similar to a past one does not mean at all that the course of action should be the same in each case, nor that the outcome will be the same. To reason by analogy is always risky, and before we act in the present on the basis of experience from the past, we have to be sure that the analogy holds in every detail.

*Assignments:* 1. What arguments can you give for and against the policy of reading history for present-day guidance?

2. Are the lessons from the past more valuable for nations or for individuals?
3. What specific lessons from the World War can you mention and which ones of these are actually being applied in present-day life?
4. Report some experiences in which your knowledge of the past helped you to solve some important personal problem.

### **8. How to read history for recreation or pastime.**

History has tremendous possibilities as an avenue of enjoyment for your leisure time. From the early days when the wondering bards sang the deeds of heroes in the palaces of kings and in the castles of nobles, down to the present day when motion pictures capitalize upon historical themes to provide recreation for the paying customers, history has been one of our most popular sources of entertainment. Below are a few suggestions on how to make use of it for this purpose.

*Read historical fiction.* An almost endless supply of good and interesting historical novels is available to anyone who wishes to read them. So important, indeed, is this phase of historical recreation that the National Council on Social Studies recently published a rather large bibliography of historical fiction useful for students in high schools.\* This makes available to history students and teachers a vast fund of historical literature that is related to the various periods. One illustration will serve to make this point clear. Dickens' *Tale of Two Cities* is a splendid story read as literature by thousands of persons. At the same time its intimate pictures of the French revolutionary period are rich in historical significance.

*Read biography.* Next to fiction for recreational purposes we have stories of the lives of men. Someone has said that truth is stranger than fiction, and that biogra-

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\*Hanna Logasa, *Historical Fiction Suitable for Junior and Senior High Schools*. McKinley Publishing Co., Philadelphia, 1927. 85 pages.

phy is more interesting than novels. Certainly well written biographies are capable of yielding an infinite amount of enjoyment, as well as profit.

*Start with light material and work up gradually.* We have mentioned fiction and biography first because they are usually within the reach of all readers. There are types of recreational reading, however, which grade all the way from the exceedingly interesting and popular up to that which would appeal chiefly to the scholar or to the specialist. As you reach the more advanced stages of historical specialization and become capable of a higher type of historical enjoyment, you may hope to break into the higher classes of non-fiction and non-biographical reading. The point here, however, is that you should not force this process unduly, but rather let it be a natural growth according to the way your interests and reading habits naturally develop.

*Get books that are written for popular consumption rather than those written for scholars.* History textbooks as a rule make poor recreational reading. They are not interesting, and they are not intended for popular consumption. It is preferable to get books that have been written for the general reader outside of school rather than books that are written for classes of students if your aim is recreation.

*Assume the leisure attitude as in reading ordinary literature.* In reading history for recreation you should follow the same plan as in reading general literature. You should not set up a serious purpose nor make work of your reading. You should not make any special effort to remember dates or facts, nor to learn anything in particular from what you read. You should read for enjoyment and not from a sense of duty. If you take this relaxed and free-and-easy course, the chances are

that you will actually learn more history in the long run. You will like to read and will read more than if you went about it more soberly and more earnestly. You should not make work of your reading to the point where you will lose interest and read few books.

*Do not try to cover the field of history systematically nor in regular chronological order.* Your recreational reading should not be a course nor a program, and should be carried out in such a free-and-easy manner that you have perfect liberty to skip about in periods of time, as well as in place. Read what you like, when you like, and as you like, bearing in mind, of course, that what you read should be worth reading. It is perfectly permissible to read first something dealing with a modern period, then an ancient, and finally back to modern again. This is probably better than to start with the early periods and come down to the present in regular and systematic order. There are advantages in many cases in getting off the beaten track and stopping to enjoy the side-lights and the by-paths, or the intimate glimpses of persons that have been heard of very little in standard treatises on history.

*Mix the recreational with the serious reading.* The greatest good comes to you, both as regards your serious reading and your recreational reading, if the two are alternated or mixed. The free-and-easy attitude that prevails in recreational reading is likely to result in your failing to get a sense of perspective, or in your failing to crystallize your ideas regarding fundamental historical principles. Your serious reading and study will thus help you to organize what you have read in a more leisurely way. Similarly, as you study in a serious vein the change to a little of the leisure type of reading will

serve to provide concreteness, color, interest, and vividness.

*Assignments:* 1. What benefits can be derived from recreational reading of history which do not result from reading history textbooks?

2. What benefits can the textbooks render which recreational reading cannot?

3. What recreational reading have you actually done in the field of history?

4. Recommend five books which you think your classmates will enjoy.

**9. How to read or study biography.** At a number of points in this chapter we have suggested that the study of biography is a valuable approach to history. It now remains for us to suggest ways in which to carry on this type of study with profit.

*Read it as literature and not as work.* The chances are that you will read more biography, enjoy it more, and therefore profit more from it, if you read the lives of various men in a free, relaxed, or recreational way, than if you take them more seriously and try to remember everything that you read, as you do when you are studying a textbook.

*Pick out the key men in history, around whom the major events and movements center.* The selection of biographies to read is a matter of major importance. There are so many worth-while men whose lives you can read that it is not at all necessary to pick men of minor importance or men who had little significance in history. If you read a hundred well chosen biographies during your career as a student, you will have a very splendid and comprehensive grasp of history, as well as a concrete and vivid picture of conditions at the more important points along the line.

*Read the lives of non-military heroes.* A common error in reading biography is that of limiting practically all the reading to the lives of great military heroes, gener-

als, soldiers, or fighters. It is true that the great majority of the men whose names stand out prominently in history have been connected with some form of military operations. The military aspects of their lives and careers were often the means of accomplishing the other worth-while things which they did. On the other hand, there have been numbers of great men who distinguished themselves as scientists, inventors, explorers, poets, philosophers, artists, and captains of industry. Men in these lines deserve your consideration just as truly as men in the military lines, and they also afford interesting and pleasant reading.

*For the time being, be a staunch friend or supporter of the man about whom you read.* Identify yourself with the leading character in the biography in order to make the history of his situation real and personal. Accept the man as your friend, your ruler, or your chief, and support him in achieving his aspirations and in climbing to the peak of his greatness. You enjoy a biography more if you read it in this state of mind, just the same as you enjoy a football game more if you are rooting for one side or the other.

*Be on guard against the biographer's undeserved praise of the man he is presenting.* As a general rule, the biographer is likely to present his man in a more favorable light than he actually deserves. There is a natural tendency to praise or eulogize and to select the parts for the total picture in such a way as to make the man appear more wonderful, noble, and good than he actually was. As you read biographies you get the impression that each man was almost a superhuman being. A good corrective for this erroneous impression is to read several biographies, particularly of men on opposite sides of great struggles. Thus you have a chance to see the



same man from his own supporters' point of view as well as from the viewpoint of his enemies. In the field of United States history, you may read the life of Robert E. Lee and the life of Ulysses S. Grant. Each biographer may praise his man to the skies and enlist your sympathies with him in his efforts to conquer his opponents. When you have finished such a biography of Grant, you are likely to have a good opinion of Grant and to think less of Lee, but when you read the biography of Lee the situation is reversed to a certain extent and you begin to realize that much of the praise of both men was exaggerated or undeserved. You should keep in mind as you read biography, therefore, that the favorable view of the man that is presented is likely to be the view which predominated among his fellows in his own country, or on his own side, and that it represents the normal thought or feeling of a large body of his contemporaries.

- Assignments:* 1. What good biographies have you read during the past year which you would especially recommend to your classmates?
2. How does biography compare with fiction in interest for you?
  3. What are the advantages and the disadvantages of the biographical approach to history?

**10. How to acquire the right kind of patriotism.** The study of history is rich in its possibilities for the development of patriotism, of both good and bad varieties. It has been guilty in the past of causing wars and arousing national animosities that would lead to future wars. The question is a double one, being first how to develop patriotism or love for your own country, and second how to avoid becoming narrow-minded and antagonistic to the people of other countries. The following are some suggestions on both of these points.

*Develop American patriotism by being a supporter of the*

*United States in her struggles and undertakings.* You become patriotic in proportion as you live and serve and strive on behalf of your country. One good way to do this is in connection with your reading, where you live over the struggles that the nation has had and you fight her battles again for her. You do not feel loyalty for your group until you become a member of it and an active participant in its undertakings.

*Try to learn how to serve wisely rather than merely to follow the flag wavers and the brass band.* Patriotism is something more than sentiment. It is expressed more in service than in celebration. The attitude, "My country, right or wrong," is merely a gushing or sentimental type of patriotism, and is not to be compared with that of the sensible, serious, and thoughtful man who tries to direct the affairs of his country so that she will be right.

*Try to help your own nation instead of trying to belittle or hold back other nations.* There are enough positive qualities in connection with the American nation to give her a place in your esteem without your needing to resort to belittling the people of other countries. Whenever your rivalry comes to the point where you try to win by pulling your opponent down rather than by climbing higher, it needs to be redirected.

*Read history from the viewpoint of foreign countries as well as from that of your own.* The author once talked to a man who had studied the history of the American Revolution both in Canada and in the United States. The man said that the only similarities between the two accounts consisted of a few names of places and battles. He said that the general spirit and narrative was different, almost to the point of not being recognizable as centering around the same struggle. It is true that a highly prejudiced and over-favorable account of American his-

tory may help you to acquire the narrow-minded and flag-waving type of patriotism, but if you get a little exposure to history as written by other countries and get some appreciation of their viewpoint you may be able to develop a much saner and more broad-minded patriotism.

*Be willing to admit that your country has made mistakes.* It would be almost inconceivable that your country should have been absolutely in the right in all particulars for one hundred and fifty years. It is not necessary to cover up all our faults nor to shut our eyes to our shortcomings in order to be patriotic. The really patriotic man is the one who is willing to face mistakes, evaluate previous events, and try to work out better ways of doing things in the future. The man who really loves his country is willing to face criticism in order that she will not deserve criticism in future.

*Try to evolve from the state of nationalism to that of internationalism.* The highest type of patriotism is that in which you are a member of the world group rather than of your own little national group. A great evil in the world today as regards international relations is the spirit of nationalism or narrow-minded patriotism, in which each person puts his own country uppermost and knows or cares little about the people of any other country. If you have not arrived at the stage of national patriotism you are probably not ready to become a good international citizen, but having arrived at the stage where you love and respect your own country, you should go on to the more advanced stage of world brotherhood and international citizenship. The method of doing this is comparable to that by which you become a patriot in your own country, namely, by identifying yourself with the struggles of mankind on a larger

basis and trying to work for the objectives which people of all nations have set up as important.

*Assignments:* 1. What service has patriotism rendered to the world and what evils has it produced?

2. To what sources do you ascribe your own patriotism?

3. What forces keep alive false patriotism?

4. In what specific ways can a student best manifest his patriotism?

**11. How to deal with historical facts which discredit your nation.** Mention has already been made of the fact that some incidents or episodes in American history are not of particular credit to our nation. The following are some points regarding how to study these phases of history.

*Keep your eyes open to the truth.* The first thing to do with history that discredits our nation is to find out what are the facts. First of all you should be a student of facts, possessed of a desire to weigh, consider, and determine what is a correct statement of events of the past. The mere fact that some incident does not look or sound desirable should not cause you to close your eyes to it or refuse to consider the possibility that it is true.

*Be willing to admit error on the part of your country.* In history as well as in the lives of individuals there is the ever-present tendency to make mistakes. A nation cannot exist for decades and centuries without doing something of which later generations will be ashamed. Our own country is no exception to this rule. As you study about it you should be prepared to face facts which are of no credit to us. If you insist that there are no faults and that there have been no mistakes, the only possible conclusion is that you are unjustifiably prejudiced.

*Judge apparent mistakes sympathetically.* Consider them in the light of their times and standards rather than in

the light of our own times and standards. Many of the mistakes of past decades would be very serious, indeed, if they were committed now, because we know so much more now than our fathers knew. We have evolved to a much higher stage during recent decades and more can be expected of us. Slavery was a terrible blot upon American honor, and is now admitted to have been so by people in both the North and the South. Yet it was very difficult to realize this at the time of the Civil War. We have to be charitable to our forefathers and judge them in the light of conditions as they were at the time they lived. We should not expect of them more than was humanly possible for them to do.

*Do not blame a whole nation for the errors of its misguided or unscrupulous leaders.* Many of the shameful or dishonorable episodes in American history were not the fault of the American people but rather of a few persons who were in power or who directed the policies at the time. This fact is very obvious in connection with present-day political scandals, and yet is often overlooked in connection with those of the past.

*Try to prevent similar errors in the present or future.* If you find that your country has done wrong in the past, the next thing to do is to see that she does not commit the same blunders in the future. If the past has any lessons for the present, these lessons should be faced squarely and your influence as a citizen should be exerted toward putting them into effect. It is much less a discredit to our nation to have made mistakes in the past than it is to make more mistakes now after we have the lessons of the past to guide us.

*Never relax in your moral standards to the point of approving acts of injustice or dishonesty on the part of our nation or any of its heroes.* Right is right, and wrong is

wrong, and dishonesty is dishonesty, whether it be in the case of a nation, a national hero, or an ordinary citizen. No amount of love for your country should lead you to approve anything that is definitely immoral, unfair, or dishonorable.

*Avoid going to extremes and belittling your country or giving other countries undeserved approval.* Put emphasis on the positive virtues of your own land instead of hunting for the few dark spots in her history. Think of your nation's good points rather than her faults. Compare the history of the United States with that of other countries, both in mistakes and in virtues, and you will discover that there is enough of good in your own country to compensate for the bad and to warrant your love and patriotic loyalty.

*Be on guard against malicious propaganda against American institutions.* What has been said about facing the truth in history does not by any means warrant your falling a prey to the underhand influences of a small minority of agitators, anarchists, and propagandists. Some of these are always at work against organized government and against the established institutions of civilization. What was said about facing the truth does not by any means warrant the policy of taking in lies or listening to mud-slinging attacks by representatives of radical organizations or anti-social groups against American government and American civilization. When you find someone who seems to have a bitter attitude toward your country and its social system you should seek evidence for the charges that are made and discount the purely prejudiced assertions which are without foundation or support.

*Assignments:* 1. Illustrate some of our chief national errors and list



beside each some national virtue or good deed which you think counterbalances it.

2. What causes the mental attitude of the "historical mud-slinger?"
3. How can you detect false propaganda that is directed against the nation?

## **12. How to judge the truth of historical statements.**

The fact that school history textbooks are usually written for students rather than for expert historians explains why they ordinarily fail to go into detail as to the exact evidence back of statements, and why they fail to stress the technical aspects of historical proof of statements. When you read the average textbook, therefore, you are reading a second-hand account of events and are getting your history by hearsay. Sometimes a book is written by a prejudiced or even an incompetent historian. It is also true, unfortunately, that some textbooks are deliberately planned to deceive you and to create a more favorable impression about men or events than is deserved. Below are a few points regarding methods of judging truth or falsity.

*Do not become a victim of the printed-page fallacy.* The fallacy of the printed page is very strong; in fact, almost universal. If anything is in print, the natural impulse of human nature is to assume that it must be true. This attitude is not justifiable, because you find such radically different accounts of the same thing in print, including statements directly opposite to each other. Since you actually find numbers of cases of this kind of conflict, the safest thing to do is to assume that any statement that is found in print may be right or may be wrong, and to examine it critically and form your own conclusions on the basis of the evidence.

*Note whether the statement was offered as a fact or as the historian's conclusion, opinion, or interpretation.* The average writer of a history textbook makes a very defin-

ite distinction between facts and opinions. When he says a thing is a fact, it is likely that he examined the evidence very critically and is in a position to know. If, however, he has recounted a body of facts and he now proposes to tell what he concludes from them, he frankly presents his opinion or interpretation, and offers it subject to your critical examination and study. As you read, therefore, you should note whether he intends a given statement as a definite statement of fact or merely as his conclusion or interpretation.

*Find out the qualifications of the historian himself.* Investigate the character of the historical writer. See whether he was honest, ethical, sober, well-trained, and free from prejudice. Try to discover whether he had the necessary preparation for writing history, as regards his instruction in scientific methods, and whether he is recognized as a man of first rank among historians. Decide whether he is a man who would value his reputation and would be careful to avoid misstatements or sweeping declarations unsupported by evidence. If you must take an account of things second-hand, you should at least make some effort to see that the word of the person who is accepted as an authority is worthy of that much faith.

*Check several accounts against each other.* If you read a number of history books dealing with the same event or historical situation and they are all in very close agreement you have more reason for accepting them as true than if they differed. This is not positive proof, for the writers may all have been actuated by the same prejudices, or all have made the same errors, but agreement does establish an inference that they are correct.

*Examine both sides of disputed questions.* It is well to develop the habit of reading on both sides of such his-

torical events as the Civil War in order to get the account as seen by Southern as well as by Northern authors, and to discount the extreme unsupported statements of each. A fairly safe rule is to read both statements and then assume that the truth lies somewhere between the two.

*Go to original sources for evidence.* The final source from which to check the truth or falsity of a statement is the original witness or the original evidence, rather than a hearsay account. The expert historian who makes a business of historical research endeavors to get actual copies of the original documents, or else the actual objects, relics, or souvenirs which have survived as fragments of the past. Thus he can piece together a picture of the past which he can actually prove to be true. These types of evidence we call original sources, as contrasted with the hearsay accounts which we call secondary sources. If you expect to become a student of history on a large scale, or possibly to develop into a professional historical research worker, you should take courses in historical method and learn how to evaluate original sources and how to determine what is valid and what is not valid evidence. The techniques of the historical research worker have been very elaborately worked out to safeguard the truth. They are comparable in many ways to the rules, regulations, and techniques which govern the conduct of a legal trial, which in reality may be classified as a special type of historical research.

- Assignments:*
1. What historical research have you done?
  2. What kinds of original sources do you have available for history study?
  3. Examine a history textbook and see how much actual evidence is given for statements made.
  4. Cite some commonly accepted historical statement which is not supported by evidence.

5. What evidence would you need in order to accept the statement that the Kaiser started the World War to prevent a revolution?

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## CHAPTER VIII

### OTHER SOCIAL STUDIES

*"The proper study of mankind is man."*

ALEXANDER POPE.

In recent years the social sciences have acquired a prominent place in the curriculum. Courses in economics, sociology, citizenship, and political science are now very common, whereas in former years they were quite scarce except in the advanced years of college and university. The rise of these subjects to a place of prominence in the curriculum has been due to our recent recognition of the fact that social phenomena can really be studied, analyzed and understood just as truly as natural phenomena can. In this chapter we shall deal with these social sciences, pointing out methods of overcoming the principal difficulties which they offer.

**1. How to study social and civic institutions.** It is quite common for us to overlook some of our most important institutions, simply because they are so necessary to our daily lives and are so closely interwoven with our activities. We find it difficult to take the detached view that is essential to a critical study of them. Below are a few suggestions looking toward the development of a better appreciation and understanding of these essential institutions.

*Study them directly, or at first hand.* Study government, education, or religion by making contacts with these institutions as they operate in your own community, and in your own daily life. Society itself is your proper

laboratory in studying the social sciences, just as truly as nature is your laboratory when you study biology. Your textbook and your works of reference are merely laboratory manuals. They direct you and show you how to observe the essential social phenomena.

*Look for historical origins or backgrounds.* Read to discover how the present institutions came to be, how their work was first begun, and what forms they have taken with the passing of time. Tie up the present-day institutions with those of which you have read in your history courses and note how the present age differs from the past in the methods of carrying on the various forms of human service. Note the methods of law enforcement or the methods of public entertainment, recreation, health, and education, as they existed in previous times. A little study of the historical evolution of our present-day social organizations and practices will give a better understanding and promote a better appreciation of what you now enjoy.

*Compare American institutions with those of other countries.* A comparative study of social and civic institutions in our country as contrasted with typical foreign countries will in many cases reveal splendid advantages of our own institutions over foreign ones, and will thus develop a keener appreciation of the social benefits which we now enjoy. There are times, however, when the comparison is unfavorable to us. In such cases, noting the ways in which foreign countries do things may give us splendid constructive ideas for use in modifying our own practices and improving our own institutions. Just as the young man may not be able really to appreciate the beauty of his young lady friend until he sees how much more attractive she is than some of her companions, so we are not able to make the most critical and



intelligent analysis of our own institutions until we compare them with those in other countries.

*Note the reactions of foreigners who have come to America because of her unique social institutions and social organization.* We have numbers of immigrants coming to America every year because it is the "land of freedom and opportunity." They come to escape the injustice and unhappiness of the old systems and social practices of certain other portions of the world, and because America has worked out something new and splendid. As you talk to these people personally, and as you read what they have written, you get a new vision of American institutions and a new love for American social practices. An understanding of what we mean by this may be gained if you will take the trouble to read Mary Antin's book, *The Promised Land*. Numbers of similar books serve the same purpose.

- Assignments:* 1. List the social and civic institutions that operate in your community, and try to make your list as complete as possible.
2. What essentials would you specify that a foreigner coming to your country should learn about her institutions in order to become a good citizen?
3. If you expected to go to a foreign country to live, how would you go about getting acquainted with the institutions and practices in that country?

**2. How to get interested in public affairs.** Perhaps you are one of the many who feel that it is their duty to be public-spirited but simply do not care very much about politics, public affairs and political happenings. Fortunately, it is possible for you to educate yourself to a new taste for citizenship or a new interest in public affairs. The following suggestions are intended to help accomplish this.

*Take part in school social and civic affairs.* One of the best ways to become public spirited is to be a good citi-

zen of your special school group. If you are a loyal member of the Boy Scouts, and later a loyal and co-operative member of the football team, and also take an interest in the activities of your student body, you really are public spirited in the civic matters that count most during your life as a student. Try to meet these responsibilities and to participate whole-heartedly in these phases of student life; you will train yourself thereby for later interests in the community, state, and nation. In other words, you become public spirited by a process of growth, starting with interest in smaller organizations and expanding your interests as your increasing age and maturity qualify you for membership in the larger groups.

*Participate in debating clubs in which public questions are discussed.* If you are by temperament interested in public speaking and debating activities, you may transfer much of this interest to public affairs because most debating clubs rely heavily upon public affairs for material around which to organize their debates and discussions. In preparing for a debate in which you are greatly interested, you will probably find yourself reading about public questions and going through numerous magazines in search of material to use as arguments. This is splendid training for citizenship and will qualify you for the careful and thoughtful analysis of public questions that will help you to vote intelligently or to participate effectively in political campaigns.

*Find your reading level and do not try to force yourself to read a too mature type of material.* If you simply are not interested in the more profound discussions of public questions, then read more popular treatments of them. If you do not get interested in the learned articles in *Harper's* and *Scribner's*, or in the critical discussions of

social problems which sometimes appear in the *Atlantic Monthly*, then drop down to a lower level as regards difficulty of reading, and read the *Literary Digest*, *Time*, and *Current Opinion*. It is better for you to be really interested in something that is easy than to try in vain to read something more difficult.

*Read the front page of the newspaper.* As a rule, world news and major political developments of the day are reported on the front page of the newspaper. It takes but a few minutes to look over the main headlines and to read enough of the beginnings of the various articles to see what is going on. A little of this reading helps you to be interested in things for which you formerly cared nothing. The fact that major events in the local news are also reported on the front page is desirable also, because you are first a citizen of your local community and second a citizen of the state and nation. You cannot really be a very public spirited citizen without being interested in the front page of the newspaper.

*Read magazines which contain numerous cartoons and pictures representing the affairs of the day.* The development of illustrated periodicals in recent years has helped very much to bring public affairs down to the level of the ordinary person as regards interest and understanding. If you turn through the cartoon sections of the *Review of Reviews*, the *World's Work*, the *Literary Digest*, and similar magazines, you see what the leading cartoonists of the day think of the major issues before the public. You will also get the cartoons that have been published in foreign countries, representing their attitudes toward American institutions or American policies. All of this is exceedingly interesting and enlightening. When you find that you do not get the point of some of the cartoons because of your lack of knowledge of

the events upon which they are based you have an additional motive for doing some reading.

*Follow a single movement or event through to the end.* Public affairs are for the most part in the nature of a continued story. If you start in the middle of the story, the whole may be almost meaningless to you because you do not know about the plot up to that point. If, however, you once pick up the thread of the story and follow it through day by day and week by week, you find it much more interesting and enlightening. Daily consistent reading of the newspaper, and weekly or monthly following of the periodicals as they are published, will increase your interest greatly and will yield a very effective type of information about public affairs.

*Assignments:* 1. How can you account for the indifference that exists toward public affairs today?

2. In what specific phases of public life are you especially interested?

3. Explain how you got interested in these topics.

4. What specific magazines or other types of reading material dealing with public affairs would you recommend to your classmates?

**3. How to keep up with current events.** The major problems of the social sciences concern the present rather than the past. They are the questions which society is facing at the moment. They must be solved in the present because the past is already gone, and you cannot wait for the far distant future. The materials with which you have to think in making up your mind about one of these problems are found in the newspapers and magazines which describe current happenings. The following are a few suggestions on how to keep up with current events.

*Skim the newspaper regularly in preference to reading it occasionally.* If your time is limited so that you cannot actually read the newspaper systematically and thor-

oughly, it is very desirable to spend ten or fifteen minutes daily scanning the headlines to find out what is happening and thus to keep up your habit of making contact with the news. A very brief period devoted to looking over the main items will enable you to go to your day's work fairly well informed about the events of the preceding twenty-four hours. Ten minutes a day for a week, spent in this manner, will give you more return than the same amount of time spent in reading thoroughly a single day's copy of the newspaper.

*Read or skim regularly some magazine which summarizes the news.* In addition to the daily reading of the newspaper, it is well to look over some journal that appears at regular intervals and that summarizes and organizes the news of a fairly long period. Such journals as the *Literary Digest*, *Time*, *Current Opinion*, *Current History*, *The Pathfinder*, *Review of Reviews*, and *World's Work* are examples of this type. At least one of these should be followed regularly and systematically.

*Listen to the news broadcast over the radio.* Some people prefer listening instead of reading and find the radio news broadcast of more interest than the same amount of time devoted to the newspaper or magazine. If your daily schedule permits you to make this contact and to do it regularly, you will find it a very helpful and profitable period.

*Follow the humorous and facetious comments of prominent journalists.* Almost every major newspaper includes a column or section devoted to the comments, cryptic remarks, and facetious flings of one or more well-known journalists or humorists of the day. Each man who writes for these columns has his own particular style and disposition, and his own peculiar philosophy of life, some of which you will approve and other people will

not. These columns often afford interesting reading, however, and you may learn a great deal from them about the news of the day, even if it is in a second-hand form and colored by the viewpoint of the particular writer. If you begin by following one such column, you may get interested in a type of news which formerly did not appeal to you. You can later get interested in the regular editorials, which you probably would not at first care to read.

*Follow the weekly or monthly syndicated articles of some outstanding reviewer of foreign affairs.* Such men as Frank H. Symonds and Eugene J. Young, because of their journalistic ability and their understanding of the viewpoint of the common man, are able to discuss the profound questions of the day in simple and interesting language. Try to make contacts with such men through newspapers or magazines, and read their articles week by week or month by month as they appear. In a year you will have covered in a critical and thoughtful way the major movements or issues which have confronted the world during that time. You will probably have also a clearer and more definite perspective of the events than you would gain from reading them day by day in the newspaper. In fact, these articles supplement the regular news accounts very well because they summarize and interpret, while the day's news merely provides basic facts.

*Take sides on issues as they come up.* If the papers are full of news on some proposed measure that is before Congress, or if there is considerable editorial discussion of a proposed reorganization of your local city government, you should read the news articles and follow this discussion not as a disinterested bystander but as an interested participant. You should try to make up your



mind as to what ought to be done, and how you would vote. Follow the news daily and search for the facts which will enable you to make your decision intelligently and correctly.

- Assignments:* 1. Report the specific things you do in order to keep up with current events.
2. Be prepared to answer questions to show that you have read the newspaper today.
  3. What plan of current events study would you suggest to your school?
  4. Compare the values of *The Literary Digest*, *Time*, and other current news magazines.

**4. How to get direct acquaintance with social phenomena instead of merely reading about them.** The conception which some people have of the social sciences is that they are simply book subjects, meaning that you learn them only by reading. This is no more true of the social than of the natural sciences. You learn about natural phenomena by observing them directly. Similarly, you learn about social phenomena by observing them directly. The following are a few suggestions concerning methods of introducing direct observation into the study of the social sciences.

*Make social excursions and observation trips.* Any course in economics, sociology, or citizenship can easily be enriched by the introduction of trips to places of civic, social, or economic interest. What was said in connection with the sciences about going to the woods, streams, etc., might be repeated here with regard to visits to police courts, chambers of commerce, social settlements, and so on.

*Inspect manufacturing concerns and industrial establishments.* If you are studying about wages, profits, the law of diminishing returns, or similar questions in economics, you can make it all much more concrete, definite, and

vital by visiting an establishment which carries on activities about which you are studying. The street car barns and shops, the railroad stations, the mills, factories, packing houses, canneries, and similar concerns are usually glad to have students visit them and get acquainted with their work. When you get this background, you are in a much better position to understand the fundamental principles underlying economic and social institutions.

*Get acquainted with all sections of your town, city, or neighborhood.* It has been said that one trouble with society today is that one-half of the people do not know how the other half lives. The rich and the poor go their separate ways and are suspicious because they do not understand each other. A local geographic survey, in which you try to get acquainted with your neighbors in all parts of the community, will lend a great deal of concreteness to your study about social problems.

*Make observations in the institutions which deal with social misfits.* You learn a great deal about society when you study it where it is out of order, just as you learn a great deal about your automobile when it is broken down. When you visit the health department you learn much about public sanitation and public health that you never realized before. Similarly, by visiting the orphans' home, the jail, the juvenile court, the penitentiary, the police court, the administrative offices of the community chest, and similar institutions for helping the misfit and the maladjusted, you see a new meaning and significance in the normal aspects of society.

*Make use of the case method and the type study method.* Abstract principles and theoretical aspects of the social sciences may be made concrete if you study their manifestations in particular cases. For instance, if you are

studying such a problem as charity in the sociology course and make the acquaintance of some particular family or individual that is supported by public charity, you have a concrete point of reference to which to turn and by which to check up the theories and principles as you learn them. Similarly, visit a key institution or make the acquaintance of some typical industry and go into your analysis of it very thoroughly. You will then have a basis upon which to build an interpretation of other situations, industries, or institutions about which you read but which you do not have opportunity to visit in person. This method of attack is spoken of as the type-study method, because you select for intensive analysis a few representative types which stand for all the rest.

*Study large-scale social and economic phenomena through their small-scale local counterparts.* Social processes that take place on a national or world-wide scale are often represented or illustrated on a small scale through similar phenomena that take place in your own community, or even in your own home. For instance, in your study of public opinion as a national or world-wide phenomenon, you may find interesting parallels in the case of your own family as it makes up its mind whether to buy a new automobile or move to a new house. Just as it is possible to "view the tempest in a teapot" so you can study any large-scale phenomenon if you find its local or small-scale counterpart.

- Assignments:*
1. What excursions have you made to social or economic institutions in the past year?
  2. Are you able to pass a test on what is to be found within a radius of one mile of your home?
  3. What excursions or trips would you suggest as being desirable for your class to take?
  4. Draw up a plan whereby you think your social science class could work a suitable program of trips and excursions into its schedule.

**5. How to make social studies function before you reach legal voting age.** There is a common but mistaken notion that you learn citizenship in school in order to be qualified to meet the situations that confront you when you become a voter of legal age; likewise, that you learn economics in order to be qualified for the responsibilities you will face when you become an adult business man, and so on through the other social studies. There is a much better justification for studying these courses in order to be a better citizen *now*. It is possible to start these subjects functioning while you are a student in school, and then to grow into adult citizenship by degrees. The following are suggestions on how to do this.

*Be thrifty and economical with your own property and money.* If you are careless, extravagant, or spendthrift when you are young and have little to spend, you will probably be much more so when you grow older and have more at your command. If you can spend your money wisely and budget what little you have so as to get the maximum value for it while you are a student, you will have laid the best possible foundation for efficiency in the realm of practical economics later.

*Think what you would do if you were in the position of a senator, governor, mayor, or city council facing an issue that is before the public.* You may practice your social and civic knowledge by thinking through the questions confronted by your public servants, and by putting yourself in the place of the leaders of civic groups.

*Practice good citizenship and good economics in your own home and neighborhood.* The quality of citizenship which you manifest when you are grown will be very well indicated by the quality of citizenship you reveal in your own home in your relation to your brothers, sisters, and parents. If you can fit in well in the home group; if you

can co-operate effectively in economic responsibilities confronting your family; if you can get along with your neighbors; if you can respect others' rights; if you can acquire a good reputation while you are young; you will probably have little difficulty when you are older in maintaining the respect and esteem of your fellow men.

*Join student organizations at school.* The extra-curricular activities of the average school offer a splendid opportunity to get some practical experience and training in civic and in economic affairs. Serving as president, secretary, or member of a committee for one of the school clubs may well be called an apprenticeship in the larger responsibilities of office holding and civic leadership. If you learn how to put a motion, how to defend your views, or how to persuade a group to see your point of view and adopt your course of action while you are a student member of a club, you will probably be able to do the same thing in the larger field of civic service as an adult.

*Be an active and constructive school citizen.* Such habits as doing your daily assignments well, co-operating and helping the teacher, playing fair in school work and in athletics, taking part in student governmental affairs, voting right and persuading others to vote right on important school elections, and showing constructive and loyal school spirit in general, constitute splendid preparation for adult citizenship, and splendid initiation into it. Similarly, being treasurer of a school group or having the responsibility for spending the money for some student undertaking may constitute valuable practical experience in the realm of business.

*Exert political influence over your parents and adult friends in connection with elections and public issues.* Follow the various campaigns that confront voters from

year to year. Study these questions carefully and decide which side is right, then get into the fight on the right side and help to win the battle in the way that will be best for society. Quite often your studies of the issues and problems will enable you to get an insight which your parents do not have the opportunity to acquire. In such a case you can go home and inform them, or persuade them to vote on the right side of a question you studied at school.

*Assist officers in law enforcement.* One of the major problems of citizenship is that of enforcement of law. You have two opportunities here to put your citizenship into practice—by obeying the laws yourself and by cooperating with officers in the enforcement of laws violated by others. This applies to such things as traffic regulations, violations of the eighteenth amendment, and also the laws of honesty in examinations at school.

*Participate in trial votes or unofficial school elections on public questions.* An election about to be held for the general public offers a good opportunity for you to cooperate with your fellow students in carrying out an election of your own. Get sample ballots from the newspapers, inform yourself about the issues at stake, set a day for the election, go through the same routine of voting as is employed in regular elections, and have a committee to canvass the returns and report the results. Such trial votes or unofficial elections are not only interesting school activities but also valuable forms of training for adult civic responsibilities.

- Assignments:* 1. Elaborate the statement that good adult citizenship is achieved by growth.
2. What are the social science problems that confront you before you reach the age of twenty-one?
  3. Make a list of some of the things you can do in school to practice good citizenship.



**6. How to decide how to vote on men or issues.** Voting is a very fundamental act of citizenship, and one which is often done unintelligently by many people. The following are some ways of improving the quality of your vote by making sure of a more intelligent decision on how to vote.

*Get the necessary facts that are basic to a correct decision.* Accurate reasoning cannot be achieved without dependable facts and information. If you wish to vote intelligently you must study the issues that are involved, acquaint yourself with conditions, become informed about the office or the problem, and really take into consideration all the factors in the case. Facts are as necessary to clear thinking as are materials for the construction of a building; without them your vote is likely to be based mainly on guess or the recommendations of persons who have selfish reasons for misleading you.

*Discount partisan appeals and propaganda.* When an election campaign is in progress you can hear all kinds of reports from all kinds of sources. The advocates of a certain man, or the proponents of a certain issue, bombard you with reasons why you should support their respective policies. Unfortunately, many of these persons are misinformed, while others are working for selfish personal or group ends. It does not pay to accept everything you hear at face value; you need to become exceedingly skillful in picking out the true from the false.

*Discount your own prejudices.* Just as other people are likely to view public questions in prejudiced ways, so you yourself may have prejudices of which you are not aware. In fact, the more prejudiced you are the less apparent is your prejudice to you, and the more sure you are that you are right. It is well to discuss public issues with persons who are opposed to your views and to read

newspapers which advocate policies opposed to those which you think are right. A fair consideration of both sides will often open your eyes to factors which you would not previously have admitted as having any merit whatsoever.

*Avoid letting party loyalty blind you to fundamental issues.* The fact that your political party is in favor of a certain issue is no guarantee at all that it is right. It is better to vote for men and issues rather than for parties, and to retain your personal integrity and independence as a citizen instead of taking all of your decisions ready-made from party leaders.

*Beware of decisions based on a single factor or only a few factors.* In voting for candidates you usually have more than one element to consider. A man may belong to your church or to your lodge, or may represent the same view as you have on some public question, but such factors as these alone should not cause you to vote for him. It may be that along with these few items of which you so heartily approve, he also has views or policies which are fundamentally unsound or distinctly unwise. Or he may have personal characteristics which disqualify him completely for the high office to which he aspires. There is entirely too much fragmentary thinking about candidates and issues, and too much deciding of the whole matter on the basis of one or two minor elements.

*Judge the man or issue by the nature of his support.* If a man is supported by an organization which is notoriously selfish and narrow-minded, that is an important element against him. To a considerable extent it is possible to judge a man by the company he keeps, or by the friends with whom he associates.

*Consider the welfare of all rather than that of a small*

*element or group.* Public questions should be decided on other bases than personal gain or selfish advantage for the group to which you belong. Elections should not be contests between selfish factions in which each tries to get the advantage of the other, but rather constructive efforts to decide fundamental issues in the best way for society as a whole.

*Judge the man as well as the issues for which he stands.* It is seldom that you can predict, when you elect a man, what issues he must face or what decisions he must make. You may know that certain questions are going to come up and you may wish to have a man who has the right views on those particular questions, but you should also remember that many other questions will come up during his term in office which you cannot predict at the time you elect him. It is important, therefore, that you not only get a man who is right on the issues that you know he must face, but also a man who is honest, intelligent, and capable, and who will make wise decisions on future issues which nobody can predict at election time.

- Assignments:* 1. To what sources would you go for facts upon an issue that is up for a forthcoming election?
2. What factors usually decide elections? What factors should decide them?
  3. Give your reasons for your stand on some recent election or on some forthcoming election and have those reasons criticized by the class.
  4. On a sheet of paper ruled in double columns, list during a period of days all the factors on both sides of some public issue and finally decide which way you ought to vote on it.

**7. How to acquire tolerance for the opinions and viewpoints of others.** Intolerance is one of the greatest problems confronting the American citizen of today. We are all tempted to think we are right and that any-

one who disagrees with us is wrong. Frequently this disagreement leads to bitterness and unpleasantness; when it is directed toward issues of international importance it leads to war. In the following paragraphs are a few constructive proposals for overcoming such intolerance.

*Remember that almost every question has two or more sides.* While no one wishes to recommend "wishy-washiness," indecision, or unwillingness ever to take a firm stand, there are numerous debatable questions upon which no one has an absolute answer or final decision. One person's judgment about what is right may be better than another person's judgment, but still there is a grain of truth in both views. A recognition of this fact will prevent a great deal of the intolerance that causes unhappiness in the world.

*Note the extreme modesty of outstanding scientists regarding their views and theories.* The man who knows the most is often the least aggressive and least insistent that his idea is right. Intolerance is often the sign of ignorance; it is used to cover up a lack of basic information or basic understanding of the real issues.

*Give credit for the grain of truth even though you cannot subscribe to the whole.* If you find something worth while in another person's opinion, even though nearly everything else is of doubtful validity, you can still keep his good will and friendship while you disagree with him if you openly and frankly accept the few points on which he is correct.

*Give credit for sincerity even though it is coupled with error.* Try to put yourself in the position of the other person and see why he views the question from the angle he does. Study his environment as a casual factor in making up his attitude and you will probably see that

if you were in a similar position and had the same background that he has you would feel the same way. If you recognize the sincerity of a man and realize that he is honest in his convictions, you have every reason to admire and think well of him.

*Get personally acquainted with your opponent.* A man with whom you would disagree violently, and to whose views you are tempted to react in a bitter or antagonistic way, frequently proves when you meet him socially to be of a very mild, friendly, and charming personality. It is very difficult to hate a man if you know him personally.

*Listen to the reasons advanced for opposing views.* Most people have plausible reasons for their convictions, just as you have for your own. If you are willing to discuss the questions on which you disagree, you will probably see the basic reasonableness of the other person's views and come to an understanding. This will not be the case if you react only to the person's conclusions without examining the evidence on which they are based.

*Distinguish between fact and opinion.* The statement that one person's opinion is as good as another's is true only if the two opinions are based on equally sound factual evidence. If one person has information and the other does not have, the two opinions are not equally good. Many questions that cause violent disagreement and bitterness would be settled in a moment if the necessary facts were made known to both sides. The first thing to do in case of a conflict of opinion is to get down to the facts.

*Do not let intellectual disagreement lead to emotional bitterness.* There is no reason why differences of opinion should result in loss of self-control, or in becoming emotional, peevish, and inclined to indulge in uncomplimen-

tary remarks. The mark of a real gentleman is his ability to disagree and still remain a friend, or, in other words, his ability to keep the whole discussion on an impersonal basis.

*Do not pursue an argument after you have reached a deadlock.* There is no good to be gained by clinging to a point if neither party can convince the other. To do so simply irritates both parties, and builds up barriers that interfere with further progress.

*Be slow to publish your own views.* The expression of a hastily formed opinion often commits you to that opinion to such an extent that you will later cling to it even though you are doubtful of its wisdom, simply in order to avoid admitting that you were mistaken. If you hear the other man's view before you express your own and are even quite sure that you disagree with him, a little further discussion may lead you to accept his idea. If you have not already committed yourself too strongly, you can make a much more graceful retreat.

- Assignments:* 1. When is tolerance a virtue and when a vice?  
 2. What per cent of persons in general do you think are sincere in their positions on social and civic questions?  
 3. Cite cases from history in which great social calamities resulted from intolerance.  
 4. Report cases in which you have changed your mind about issues upon which you previously were very prejudiced or dogmatic.

**8. How to apply economics to your own affairs.** If your study of economics is to be of major value to you, it should actually make some difference in the way you manage your personal affairs. The following are a few practical suggestions along this line.

*Earn some money of your own.* Nothing quite so effectively gives you an appreciation of the relative values of goods and of the significance of money as the experience of earning for yourself. The reason is that when



you work for your own money you have a definite basis for evaluating the dollar in terms of effort, time, energy, discomfort, or unpleasantness. The inability of some persons to appreciate the value of money is due to the fact that they have not had much experience in earning it and therefore lack the necessary basis for judgment.

*Keep a record of your receipts and expenditures.* If you write down what you get and what you spend and balance up your accounts at the end of the month, you can examine and analyze your economic status with all the facts before you. If you are one of the many persons who "cannot see where all the money has gone," keeping a record of your expenses will be of tremendous service.

*Live within your income.* If you have a certain amount of money coming in, plan your expenditures so that they will not go over that amount. If you cannot live within your budget when you have only a small amount, you will not be able to do any better when you have more funds at your disposal later.

*Adopt a definite savings plan.* Insurance statistics reveal that only a very small percentage of persons have any economic surplus when they die. A large majority are dependent upon their families or upon some form of charity during old age. The reason is not that they did not earn enough money but rather that they did not save. A child whose allowance is fifty cents a week and who cannot save anything out of it will probably not be a very good saver when he is mature and has an income of five thousand dollars a year. Successful saving depends upon the attitude and habit more than upon the amount of income.

*Operate a budget.* Using your record of receipts and expenditures as a basis for your planning, work out an

outline of the various types of expenditures which you must make and the percentage of the total income which should go to each. Make due allowance for necessities as well as luxuries, keep all within your income, and allow a certain percentage for saving. The virtue of a budget is that it helps you to distribute your funds in proportion to your needs, and prevents your indulging one need at the expense of others which are more important. That expenditure of your money is best which is proportionately distributed over your several wants, as contrasted with that based upon the policy of buying heavily in one field and letting the others all wait.

*Get acquainted with standard business practices.* Millions of dollars are lost annually because of ignorance and negligence of simple business matters. You should learn how to deposit money in a bank, how to write a check, how to keep your stubs posted up, how to take care of your monthly bills, how to check bills as to their accuracy, and how to get and handle receipts for money expended. The study of economics may acquaint you with fundamental principles and theories of the organization of economic society, but along with it you should also get a practical acquaintance with the business world so that you can fit into the system and carry out ordinary transactions intelligently.

*Be businesslike, even though the values involved are small.* You may not have very much money to put in the bank, yet it is better to put a dollar or five dollars into the bank and thus cultivate the habit of having your money safely cared for than to leave it in your dresser drawer or on your shelf. The same principle applies to such questions as lending money to your friends, taking care of your property, and getting receipts for bills paid.

*Form the habit of seeking sound advice before you make important purchases or incur financial obligations.* When you are considering the purchase of some article which you very much desire, it is only natural that you should become enthusiastic over it. You are likely to see all its fine points and overlook its objectionable features. The slogan that is very important in the investment world, namely, "Investigate before you invest," should be employed in all of your financial transactions, however small they may be.

*Study the art of selecting goods to get the most value for your money.* The art of purchasing is a very important one, and is carried out more efficiently by some people than by others. A person who has learned how to judge values and how to compare goods can get three or four times as much value for his money as another person who goes about his purchases in a haphazard and unsystematic way. A good rule when you are learning how to purchase some new type of commodity is never to buy until you have looked in three or four different stores. By "shopping around" you acquire definite standards of value and find out the special features or values in the different brands or types of goods under consideration.

*Develop "sales resistance."* The art of salesmanship has been developed to a very high point in modern times, and expert salesmen are taught how to sell goods by scientific methods. They are sometimes trained to break down the resistance of the customer and get him to purchase whether he really needs the goods or not. Many of the high-pressure methods that have been evolved in certain lines of business are extremely well worked out, and are so effective that many customers are almost completely helpless in the presence of these

scientifically trained sales persons. The result is that the average customer or citizen needs training in the art of judging for himself, making his own decisions, and liberating himself from the salesman. Simply being aware of this danger should help you to resist the appeal of the salesman. But there are other devices for accomplishing this end. One is that of never making an important decision in the presence of the sales person, or while under the influence of his persuasive tongue. Take a little time to think it over. Go home and sleep on it, or confer with someone who is not particularly interested in the question, and get his idea of the soundness or wisdom of the purchase.

*Organize your work for efficiency by employing the principle of specialization and division of labor.* The system of division of labor in the industrial world in modern times has come to be very widespread because it gets more accomplished for the same amount of expenditure. If a man specializes in doing one thing for quite a period he becomes very skillful and can produce more than if he changed about from one job to another. The same is true in your own daily life. If you have a dozen jobs to do and flit from one to another all day, you hardly get started on one before you change to another, and thus you work at low efficiency all the time. Organize your daily activities so that you can take care of a large amount of one phase of your work at a time. You will acquire momentum in doing that kind of work while you are at it. Then later you can specialize in another one for a long period. Thus you have less flitting back and forth from one job to another and you increase your efficiency.

*Select your life work in the light of a thorough study of many vocations.* The average person goes into his work

in a hit-or-miss way, finding his place in the world's work simply by chance or accident. One of the most important economic decisions you have to make concerns the work you are going to do for a living and this choice should be made in the light of a thorough study of the nature of the work and its service to society. The more effort you spend in getting the basic facts for decision, the more likely you will be to get along well in the world.

*Assignments:* 1. Plan and submit for criticism a personal expense record blank.

2. What would you say are your principal weaknesses or shortcomings with respect to your handling of your economic affairs?

3. List five ways in which you think the average student could improve his personal and financial management.

4. What plan of saving would you recommend for a student?

**9. How to prepare for leadership.** One of the greatest needs in America today is the need for good leaders. One of your widest opportunities for service to the world lies in your being a good leader. Below are a few methods of developing this desirable trait.

*Study diligently and take a leading part in regular classroom work.* Many of the best leaders in school are those who establish themselves in the respect of their classmates because they are diligent, earnest, and good students.

*Be a good follower when someone else is leading.* Every leader must necessarily work up to the position of leadership from that of a mere member in his group. If you cannot fit in and cooperate when others are leading, you will probably not be able to work well with others when you have a chance to lead. If you aspire to leadership, therefore, you should try in every way possible to cooperate with your classmates and teachers.

*Join school extra-curricular organizations.* One of the

great advantages of the various clubs and organizations which are found in the average high school or college lies in the leadership training which they provide. Leadership in these little groups is simply the first step toward leadership in larger civic groups to which you will belong when you grow older.

*Run for office in student groups.* If you can acquire the support necessary to gain election to an office in some organization or club, you have a good opportunity to serve your apprenticeship as a leader. It is best to try first for some minor position and fill it so creditably that you will be chosen for something more important. In this way you can begin where you are sure to succeed, and can work up to greater responsibilities which at first might be too much for you.

*Study the rules of parliamentary procedure.* Practically all groups or organizations transact their business by means of fairly definite rules and regulations. Buy a copy of a book on parliamentary procedure and learn how to preside, how to put motions, what motions are permitted to take precedence over others, and similar points. You will naturally be in demand as a leader because you know the rules of the game which the group is playing. The person who has the best knowledge of the rules is the one to whom his fellow students will tend to look for guidance.

*Study the constitution, by-laws, and past history of your group or organization.* It does not take a great deal of time and effort to inform yourself about the history and organization of a club or group. Since, however, the average group is made up of a changing membership that comes and goes from year to year, many of its members are ignorant of its background, traditions, or history. Many of the members of a group do not know



anything about the constitution or by-laws, and because of their indifference they are not in a good position to exercise leadership or to direct the undertakings of the group. If you aspire to leadership, therefore, get this background which the rest of the members do not have, and then you will find yourself in a key position. Your fellow members will come to you for information or guidance on points about which they did not take the trouble to inform themselves beforehand.

*Be willing to do a great deal of hard work in the form of service to the group.* Leadership involves responsibility and hard work. The one who is willing to take a position as an officer or committee member, and who is willing to do the detail work that is necessary in order to perform the service effectively, will soon find that the group will let responsibilities fall upon his shoulders. As he shows himself capable of managing more and more of their affairs, the group comes to depend upon him more, and thus his leadership is permanently established. If you are not willing to work, you should give up your aspirations to leadership.

*Practice the art of public speaking.* The leader must be capable of expressing himself in public. If you have a chance to take a course in public speaking, so much the better. If not, join debating societies, oratorical clubs, and similar groups, and try to cultivate your capacity for speaking effectively in public. Many times there are persons in a group who have more real ability than those who succeed in winning support, but who do not gain the deserved position of leadership because they are not capable of expressing their ideas effectively. They may be too timid or modest to get up and deliver the good ideas they have to offer.

*Do not reveal your doubts or lack of self-confidence to the*

*group.* Confidence is a highly prized quality in a leader. A group likes to trust itself to the guidance of a person who seems to know where he is going and what he is doing. Your ideas are probably as good as those of anyone else, but if you have your doubts about them, revise your plans thoroughly before you offer them to the group. Once you are sure of your policy and know what you are trying to accomplish, display your self-confidence and carry your policy through with energy and determination.

*Cultivate tact, diplomacy, and salesmanship.* You may have some splendid ideas and some constructive proposals to offer, and a program which your group should by all means adopt, but if you cannot persuade the members that you are right, or if you do not have the qualities of tact, diplomacy, or salesmanship necessary to enlist the support of the group, your leadership becomes ineffective.

*Be alert to discover the status of group opinion.* Someone has said that leadership calls for the nice art of judging public opinion within the group. Some gifted leaders have developed the habit of letting others discuss a problem while they sit and take in the various contributions; then they themselves sum up these various contributions and propose as their own a course of action which the group as a whole really helped them to formulate.

*Try to foresee issues and have your plans made before the membership of the group as a whole discovers the issues.* The leader is one jump ahead of his group. He has already explored the new territory before the rest of the group reaches it. Because he has a course of action all ready, or a path previously mapped out, he naturally

becomes the guide for those who are not so well prepared.

*Observe good leaders and imitate them.* While you sit in a meeting and watch the chairman preside, notice how he does it. Take note of the expressions he uses when he puts new business before the group. Learn his vocabulary. Note any special methods or devices which seem to be unusually effective, and practice them yourself. There is much to be learned in this manner.

*Read biographies of great leaders.* If you read the lives of the great men of history who have influenced and inspired millions of followers, you may get many interesting suggestions that you can apply in the leadership of smaller groups with which you are connected. The greatest service which these biographies will render you, however, is in the line of inspiration or the development of ambition. Reading the life of such a man as Napoleon Bonaparte will probably not teach you how to be a great general. Many of his methods will not apply to you as you try to be a leader in some local neighborhood organization to which you belong, but the dynamic character of the man and the inspiration of his career may awaken in you aspirations to greatness in your own chosen field of leadership.

- Assignments:* 1. What opportunities for leadership are there in your present situation?
2. Analyze some successful school leader and point out his desirable traits.
3. What traits or qualifications for leadership do you think you need most to develop?
4. What is your estimate of extra-curricular activities as a form of training in leadership and how can these activities be made to give more such training?

**10. How to acquire the spirit of social service.** The good citizen is one who serves rather than the one who

merely seeks his own advantage. Cultivation of the spirit of service belongs among the aims of social science courses in school. The following are some ways of developing this quality.

*Get acquainted with the conditions of the poor and the unfortunate.* Merely learning how the more unfortunate half of the population lives, and merely understanding the conditions under which it struggles, should go far toward developing a desire to relieve those conditions.

*Make a study of the opportunities and needs for service.* Try to get acquainted with the work of the various service agencies and organizations. Note how the health department, police, fire department, parks, playgrounds, community chest, salvation army, and other organizations, are trying to improve the condition of the unfortunate. On such a question as begging, for instance, study the sociology and psychology of the situation so that you know how to help a beggar intelligently rather than to encourage him in shiftlessness by unwise help. The art of being of service to unfortunates is no simple matter, and there is much that you can learn about it. In fact, the schools of social service that operate in the large universities in connection with departments of sociology give long periods of training for the development of scientific and expert social workers. The average citizen may well acquire the spirit of social service, but if you wish to go into social work as a profession it is very necessary that you study thoroughly the practical methods of putting your altruistic impulses to work. Even if you do not intend to be a social worker by vocation, there is much to be said in favor of getting acquainted with methods by which as a layman you can render valuable service.

*Participate in local drives and service campaigns.* Enlist

as a helper in clean-up drives, or in raising money for the Red Cross, community chest, salvation army, and the worth-while civic undertakings of other responsible organizations. Time spent in helping such organizations to do their work will help you to feel the satisfaction that comes from rendering unselfish service, and will pave the way for other forms of service.

*Be a loyal member of your group.* There is a possibility of service upon two levels. One is the kind which you render to people who are less fortunate than you; the other is the kind which you render to your fellow members within the group. If you are a member of a football team or debating squad, you have just as real an opportunity for service as if you were a rich man making donations to the poor. Every organization and group offers opportunity for real constructive work for the good of that organization, and if you get the true spirit of service among your equals, you have already made considerable progress.

*Do a real favor to someone and see how good it makes you feel.* Doing something good for others really makes you feel quite happy. Often you get more satisfaction out of making someone else happy than you do out of doing a thing for your own selfish pleasure.

*Read the lives and works of great philanthropists.* Anyone who reads Jane Addams' *Twenty Years at Hull House* can hardly help having a more intelligent and sympathetic attitude toward charity and relief work as it is carried out in social settlements in the big cities. Similarly, the story of Florence Nightingale makes good reading and supplies an inspiration of no small value.

*Note how much you owe to the unselfish service of your forefathers.* If you look about you will see that in many ways you are the beneficiary of the ages that have

passed. Great leaders and great servants of previous times have made their contributions to the world and have done their bits to make the world a pleasant and happy place in which to live. The more you study history and get acquainted with the unselfish work that has been done in the past by great social servants, the easier it is for you to think in altruistic terms.

- Assignments:* 1. Make a list of the benefits which you enjoy today because of the unselfishness of others.
2. What specific needs for social service in your own neighborhood can you report?
  3. What can your class do as a group to render such service as is needed?
  4. To what specific sources do you credit your own interest in helping others?

**11. How to develop internationalism or world brotherhood.** Citizenship is rapidly expanding so that it now means more than merely being a loyal member of your own nation group. The good citizen nowadays is not only a citizen of his own country but a citizen of the world. He must think in terms of world group consciousness, considering himself a member of the human race rather than merely a member of the United States national unit. The following are some ways in which this attitude may be cultivated.

*Enlarge your circle of group loyalty gradually.* You do not become a world citizen all at once. You grow into it from being a citizen of your family group, your neighborhood group, your school group, your city, state, and national group. If you are not interested in the welfare of your school or city you probably will not develop a very high quality of state pride. If you are not patriotic toward your country, you will not be able to think in the broader terms of the brotherhood of man. World



group consciousness is simply the culmination of a long period of ever-expanding group loyalties.

*Get acquainted with your foreign neighbors.* It is easy to be suspicious of foreigners if you know very little about them. The more you know about the people in Germany, France, England, Italy, Japan, China, Russia, and so on, the more human they appear to be, and the more they seem to be actuated by the same impulses as we are, and to be striving for the same great ends for which you and I strive. A closer acquaintance will help us all to become better friends.

*Get acquainted with the better element of foreign immigrants in America.* Sometimes you tend to judge all foreigners by some ignorant, poor, and possibly immoral individual immigrant who has not had a fair chance in the world. To do this is just as unfair as to judge all Americans by those who fill the jails and penitentiaries. If you cultivate the better element of foreign immigrants and get acquainted with those who have education, refinement, and high character, and if you also bear in mind that there are numerous persons of this type, you will readily acquire an appreciation of foreigners, and a new willingness to accept them as your friends and brothers.

*Travel, if only for a short trip into Mexico or Canada.* Those who have visited foreign countries tell us that the people there go about their daily pursuits in very much the same prosaic, businesslike, earnest, and anxious manner that you and I do. They say it is sometimes difficult to attach as much significance to a boundary line as we have been accustomed to attach to it. There is a tendency to think of a foreign country as being extremely different from our own, not only as regards the land and occupations but also the looks and

character of the people. If you get over the boundary into Canada or Mexico for even a short time, a great deal of this illusion will vanish.

*Read English translations of books written by foreign authors.* The atmosphere and spirit of a foreign country is easily absorbed if you read books written by foreign authors. The better works of foreign literature are translated into English and published in our own country, and will help you to get the foreign point of view a great deal better than books written about foreign countries by American authors. Stories of the World War, written in European countries and translated into English, will help you to develop a feeling of brotherhood for soldiers who fought on the other side.

*Read the world news in the papers and magazines.* Merely following the front page news items from France, Germany, Italy, and elsewhere helps you to get acquainted with the other countries, and to have something in common with their citizens. This takes very little time but does much to develop an attitude of internationalism and world brotherhood.

*Join organizations or movements that take in foreign members.* One phase of the process of building internationalism consists of organizing groups of an international scope interested in more or less specialized types of activity. For instance( the Boy Scouts, the Y. M. C. A., the Y. W. C. A., the Red Cross, foreign missionary societies, scientific associations, and labor unions are already organized and are thinking to a considerable extent in terms of the world rather than of single nations. Working in such a group will help you to cultivate friendship for the people of foreign lands.

*Correspond with pupils in foreign countries.* The device of establishing communication between students in

American and in foreign schools has come to be quite common and is often worked out on a basis that is both pleasant and profitable.

*Read the scientific literature about race differences and race problems.* When you study race problems from a scientific angle, you discover that it is very difficult to make a sharp distinction between the English, German, and French as racial types. What you ordinarily think of as fundamental differences are simply differences in language, which in turn are purely the products of teaching. They are not at all the results of inheritance. There are, of course, genuine differences between the major races, such as the black, the yellow, and the white, but the differences here are mainly physical and not accompanied by nearly so great differences in intelligence, temperament, disposition, or moral character as the popular mind has tended to imagine. When you find that the foreigner is in reality more nearly your brother than you thought, you may have less difficulty in accepting him as a friend.

*Be on guard against untrue or prejudiced history.* One of the chief reasons why it is hard for us to be fair to foreigners is that our own history textbooks often misrepresent them so badly. It has been customary in the past to study history from an exceedingly narrow-minded and prejudiced viewpoint. This has tended to glorify our own nation and belittle the peoples of all other nations. Textbooks sometimes misrepresent the facts regarding our own national history and cover up our shameful historical episodes. This perversion of the truth has increased national ill will. The same thing has been done in the history textbooks in other countries, and the result is that wars and hatreds have been encouraged. As you read history you ought to make

allowance for this fact and refuse to take without question every statement you read; you will probably be more sympathetic with the peoples of other countries, and much less inclined to hate them or look down upon them.

- Assignments:* 1. What real differences can you find between the people of your own country and those of some foreign country?
2. What forces are working for internationalism in the world?
  3. What unnecessary prejudices hinder the development of internationalism?
  4. How can an individual contribute to the cause of world brotherhood?
  5. What can your school do to cultivate the good will of students in foreign countries?

**12. How to develop a high moral character.** Morality and citizenship are very hard to separate. It is impossible to be the best type of citizen without also being the best type of individual from the moral viewpoint. The paragraphs which follow describe some ways to cultivate this side of your nature.

*Study the consequences of different forms of conduct.* One phase of the problem of doing right is the knowledge of what is right. Good moral judgment is essential to good moral conduct. In order to know what is right, and in order to make sound judgments as to questions of morality, you have to know what the consequences of the acts are, or what the results are going to be in terms of human happiness and welfare. One reason why persons of low mental ability commit crimes more often than those of higher intelligence is that they cannot foresee the consequences of their acts. In other words, they have poor moral judgment. Knowing the right does not at all insure that you will do it, but if you do not know what is right you lack the first essential to achieving it.

*Imitate someone whom you respect and admire.* A good way to develop moral ideals and good ethical judgment is to pick out someone who is strong, noble, and upright, and try to do things the way he does them. You have many such models for imitation, including a high type of teacher in your school, a character in a novel which you have read, a member of your own family, a member of the opposite sex for whom you have more than ordinary regard, or even some character prominent in public life or in history. The reading of biographies of great men offers many such possibilities.

*Give religion a place in your life.* Religion throughout all the ages has had tremendous power for moral betterment. While it is true that some great moral leaders have had no particular interest in religion, the vast majority has been identified with one form of religion or another. If you take part in church and religious activities, you are more likely to win your battles against temptation, and to develop the high ideal of personal conduct to which you aspire.

*Be good because it makes the world happier, rather than because it will bring you a personal reward.* The desire to get into heaven, to avoid hell fire, or to keep out of jail should be classed as selfish motives for morality. A better motive is to do the right thing because it helps the world to move along smoothly and helps those who live in it to get along together more happily. Morality is social rather than purely personal or individual.

*Choose a high type of friends and associations.* To a very great degree you borrow your moral standards from those with whom you associate. Morality is largely a question of group standards and group opinions. If you choose friends of a better type you will come to admire a better quality of conduct. If you

associate with degenerates you will almost certainly give up many of your high ideals.

*Pick out a select moral group to whom you may look for support in the face of temptation.* You sometimes have to decide an issue when the members of the group with whom you find yourself at the time are all on the wrong side. To be able to do what you think is right in the face of such odds is a real test of character. A good way to face such odds is to build up a select group of your own, including persons of high moral standards, and then to check a given act or form of conduct by asking yourself what these persons would think of you if they could see you. This select group may include such persons as your mother, some much esteemed teacher, your pastor or religious adviser, the memory of someone who is now dead, or some great character or being from the realm of religion. It is often quite difficult to face the crowd when it seems to be wrong, but a great deal of comfort is to be gained from the invisible support of your select group, upon whose approval you can depend.

*Direct your undesirable impulses into useful channels.* One of the best methods by which to conquer an undesirable habit or to overcome a strong temptation is that known as sublimation. It means turning the lower or animal impulses into higher, artistic, or refined avenues for self-expression. One example of this occurs when habits of profanity and foul language are overcome by the cultivation of an interest in poetry and good literature. Similarly, an interest in athletics may be a fine method of overcoming the temptation to use tobacco. The principle underlying these illustrations is that if you fill your life full of something wholesome, fine, and noble, you crowd out the less desirable impulses.

*Reduce your moral decisions to fixed habits so that you*



*do not have to debate issues again and again in the face of temptation.* A great executive or administrator is characterized by his ability to make a decision and to let that decision be permanent. He establishes his policies and lives up to them consistently. This is in sharp contrast with the type of person who changes his mind in the face of each new case or situation, and who cannot tell what policy he will be acting on tomorrow because he always settles tomorrow's problems on the basis of tomorrow's whims. In the realm of moral conduct this same contrast is to be noted. If you have to stop each time you face a temptation and decide what you will do about it, you are not likely to win. If you first study the situation, decide what is right, and reduce that to habit so that the question is no longer debatable, you will find yourself in a much better position to resist temptations when they come to you in the future.

*Fight against one bad habit at a time until you have mastered it.* In conquering undesirable and immoral habits there is an advantage in picking out one thing at a time and giving all your efforts to it until you have it subjected or conquered. Then you are free to take up the fight against another. A great general with a small army facing tremendous odds seeks to keep his enemy divided and to strike at one place at a time instead of waiting until his enemies all get the chance to unite against him; likewise, it is well for you to fight your moral battles one at a time under favorable circumstances. This applies to building new habits as well as to breaking old or undesirable ones.

*Avoid becoming a "goody-goody" type of personality.* In your efforts to develop high moral conduct you should avoid becoming a prig or making yourself distasteful to your friends by adopting the attitude that you are better

than everybody else. You need never have any apology for doing right or for being on the right side of a question, nor should you seek praise for being on the right side of the question. Good character should be combined with good personality, lest by your eccentric manner you bring into discredit the very virtues for which you stand, and make them appear unattractive to those who otherwise would imitate them.

- Assignments:* 1. How does character relate to citizenship?  
 2. What is a good way to break a bad habit?  
 3. What specific character traits need most to be developed in your class or school?  
 4. What can your class or school do to raise its moral tone?

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## CHAPTER IX

### THE PRACTICAL ARTS

*"Whatever is worth doing at all is worth doing well."*

EARL OF CHESTERFIELD.

Under the term practical arts are included such courses as auto mechanics, sheet metal work, machine shop, electric shop, agriculture, poultry husbandry, salesmanship, bookkeeping, shorthand, typing, cooking, sewing, and millinery. This chapter will treat the problems involved in studying these subjects, whether from the vocational or non-vocational viewpoints. In some practical courses your aim will be to learn how to make a living. In others it will be to learn how to perform better the unspecialized or non-vocational practical activities that are involved in your own home or in your ordinary duties outside of a regular job.

**1. How to choose a vocation.** The choice of a vocation is one of the most important decisions you will have to make at any time in your life. This decision is often made in a very haphazard way, and in many cases it is not so much a choice as an accident. Below are a few suggestions on how to make this choice wisely and well.

*Avoid a too hasty decision as well as a too long deferred decision.* It is possible to make a mistake by deciding too early in life what you think you are interested in or want to do. If you build your education around one goal and find out later that you were mistaken in your choice, much of your training has been turned in the wrong direction. The opposite error is that of putting

off the decision until most of your educational period has passed. Then it is too late to train yourself properly for the occupations that require extensive preparation and offer great rewards.

*Choose a field before deciding on a specific job within it.* It is better to decide first between such major divisions of occupations as agriculture, commerce, industry, or the professions, before you begin to make comparisons between stock raising and poultry husbandry, between salesmanship and stenography, or between law and medicine. Having made a wise choice of the general division within which you are going to work, the choice of the minor subdivision may come later.

*Judge a vocation on more than one or two factors.* The relative merits of two or more vocations depend upon many different qualities or factors. Comparisons should not be made on the basis of a consideration of only one or two elements. You must take account of the value of the service to society, the kind of task to be performed by the worker, the income, the relation to health, the chance for progression or improvement, the social esteem in which the job is held, the regularity of work, the age of retirement, the supply of workers already in the field, and innumerable others of the same general type. If you check several vocations by such a list of items as the above you are much more likely to make a valid, complete, and dependable comparison than if you pass judgment on the various occupations in the lump.

*Make a systematic study of the various occupations.* There is a growing tendency for publishers to issue textbooks which deal with the occupations, and which analyze them in some such fashion as was mentioned above. If you can get access to such a definite course in school it is wise to take it. It will probably be of greater value

than most other courses which you could get in its place. If no such course is available, you can at least purchase a book and spend some time on your own behalf in trying to acquire this necessary information.

*Observe persons engaged in the occupations which you are considering.* A few visits to industrial establishments where the various occupations are being carried on will amply repay you for the time and effort. The average person comes into contact with only a relatively small number of jobs in his daily rounds, and needs to make a definite effort to supplement these haphazard observations by visits and studies of a more systematic nature.

*Get the reactions and occupational attitudes of those who are already in the occupations which you are considering.* If you make the acquaintance of a number of persons in a given job, and talk to them about the weather, about politics, and the condition of business, you soon discover whether they are happy or unhappy, whether they think the world is giving them a square deal, whether they are proud of their occupation, whether they are satisfied and optimistic, or whether they are disillusioned and pessimistic. The persons who are in a job can often see its disadvantages and its limitations much more clearly than those who are outside, and as a rule they are quite free to express their attitudes toward their work.

*Take vocational try-out courses in several different lines.* A movement which has gained considerable headway in high schools, and to a lesser extent in college, is that of offering courses in which you have a chance to try your luck and skill at one type of work after another, each for a very short time. The aim of such courses is not so much to train you for an occupation as to give you a chance to see whether you would like it and want

to take more systematic training in it. It is really a policy of sampling, and it offers tremendous possibilities of helping you to make a wise decision. If you think you have decided on a job and cannot get a chance at it in this brief sampling way, it may even be wise to take a course for an entire semester or year in that one line and then abandon it if you find that it is not to your liking.

*Consider the cost of getting into the work.* Some vocations may be very desirable, but out of the question because of your financial status. The cost of training may be beyond your means. Take, for example, the medical profession. The period of college training for it is so long and expenses are so great that unless you are in fairly good financial circumstances there is danger that you will not be able to carry your training through to completion. If your training course is cut short at any time you lose the benefit of much of the specialized training you have had up to that point, and are little better qualified for anything else. It is well to face the facts squarely and not to indulge in idle dreams when the chances are very decidedly against you.

*Make a thorough study of yourself.* So far we have considered mainly the study of occupations; you will next note that your own qualifications, talents, and abilities have much to do with the job in which you should work. You should take a thorough inventory of yourself from every angle, economic, physical, mental, social, and moral. You should try to rate your own personality as well as your mentality and your special talents for particular kinds of work. You should face the facts squarely and admit your limitations to yourself and try not to choose a vocation for which you would be handicapped. Your experience in the academic school subjects will



often help you in making a sound estimate of your ability. If you are having difficulty in making good grades at school, that is a strong indication, but not necessarily infallible proof, that you should not attempt to enter the more learned professions in which success will depend so largely upon abstract intelligence. Similarly, if you are decidedly lacking in personal force, self-confidence, and ability to influence others, that should be an argument against your trying to enter politics, salesmanship, or other vocations which stress the element of influencing others.

*Do not trust infantile interests and inclinations as indices of your vocational talents.* The fact that when you were five years old you had a tendency to cut the legs off of frogs to see how they would behave is a very poor indication that you ought to be a surgeon. Similarly, the fact that you had a tendency to assemble great collections of keys, bolts, horseshoes, chains, and wheels, is not by any means proof that you were intended to be a junk dealer. Studies that have been made regarding early interests and occupational preferences reveal that these are exceedingly undependable.

*Get advice from persons who know your abilities and shortcomings.* It is fortunate that most schools and colleges now have departments or divisions of vocational guidance. The major aim of these is to help you adjust yourself to the world in which you are going to work. For this purpose the office assembles data regarding your scholarship and intelligence, as well as teachers' ratings of your personal and social attributes. Sometimes these bureaus or departments administer tests, both of general intelligence and of special aptitudes, in order to get more adequate information about you. All such service is for your good and is clear gain. Your

attitude toward these endeavors should be one of the most complete cooperation.

*Beware of quacks in the vocational guidance profession.* What has just been said about advice should not be taken as a justification for going to a phrenologist, a palmist, a fortune teller, or one who professes to tell you what you ought to do by looking up the position of the stars on the day you were born. Most intelligent persons have already learned to avoid these quacks because of the obvious superstitions involved. There is a second type of quack, however, who is more dangerous because he is less easily discovered. He is the one who operates under the guise of modern psychology, professing to analyze your character and personality, and to advise you about your occupational choice, in exchange for a considerable financial fee. Every year hundreds or thousands of victims pay good money to persons operating one scheme or another of this kind. These fakers profess to apply modern psychology to vocational guidance. In reality they apply modern psychology only in swindling helpless victims. As a general rule, but with the inevitable exceptions, vocational guidance that is honest, competent, and worthy of your trust is most likely to be provided free, under the sanction of reputable educational or social institutions, the standing of which is above reproach.

- Assignments:* 1. What percentage of persons do you think choose their occupations and what percentage get into them by accident?
2. What books do you know that are especially good on how to choose a vocation?
  3. Prepare to debate on one side of the question: Resolved, that it is better to aim too high than too low in a vocational choice.
  4. Classify the occupations into a few minor divisions and tell what types of persons you think should attempt each division.

## **2. How to select the practical courses to take while**

**in school.** The task of choosing practical studies to take in school is somewhat similar to that of choosing a life occupation. Much of what was said in the previous section will apply here, but a number of additional points should be considered. These are presented in the following paragraphs.

*First take exploratory courses to help you make your vocational choice.* The first practical courses you take in school should be for exploratory purposes, to help you decide what occupation you are going to choose. These have the vocational guidance aim rather than that of vocational training. Mention has already been made of these in the previous paragraphs.

*Take general survey courses before you take highly specialized ones.* It is preferable to take a course in general agriculture before you take one in farm mechanics, poultry raising, or cheese making. The same policies apply in the vocational subjects as in the field of sciences; a general science course should precede special sciences, and a general vocational course should precede special courses in the specific phases of a vocation.

*Take account of the facilities available in your particular school.* When other factors are equal it is preferable to choose a practical arts course for which your school is well equipped to do good work. If the printing shop is well equipped and the auto shop is hardly worthy of the name, it is possible that you should elect printing instead of auto mechanics. Certainly your local school equipment and teaching staff should be taken into consideration as one of the many factors in deciding this question.

*Take courses for immediate service as a means of self-support while completing your education.* For many students the question of earning a way through college is

of the first magnitude, and has a bearing on the choice of courses. Many girls earn their way through high school and college working as stenographers, thus reaping the financial fruits of the courses which they had foresight enough to take early in their school careers. Some of the practical subjects give immediate returns after a fairly small investment in training, and furnish support through the remaining period of your education. They may have high temporary value even though you do not intend to follow them permanently.

*Be sure to get some practical training for the non-vocational practical activities of daily life.* A boy should learn how to use ordinary tools, to take care of ordinary household and office machinery, to operate and make minor adjustments on an automobile, to repair electric light fixtures, water faucets, and doors that squeak or stick. Girls, whether they ever expect to be full-time home makers or not, ought to learn the elements of cooking, sewing, housekeeping, marketing, and the care and repair of household furnishings.

*Beware of the common fallacy of overemphasizing entrance requirements and requirements for advanced study.* Many students who wish to take practical training do not do so because they are thinking in terms of college entrance requirements when they plan their high school courses. Or in college they think about degree requirements and the requirements for graduate study. Many of these students never really go on to the advanced study for which they have sacrificed their previous educational needs, and are losers in the end. It is well to take care of your real needs first, even if doing so necessitates your putting requirements for advanced study into the background.

*Do not ignore, belittle, or crowd out all academic or the-*

*oretical study.* A caution should be mentioned at this point against an overemphasis on practical courses. Some students speak as if all the theoretical courses were worthless and useless. A person who has no academic training is not in a position to get the most profit even from his practical courses. A wise balance between the two is preferable to an arrangement of courses which is top-heavy in either.

*Assignments:* 1. Make a list of the practical arts courses that are available in your school.

2. Tell what practical or vocational courses you are taking or have taken and give your reasons for taking them.

3. Report the results of any exploratory courses you have ever taken.

4. Select some one occupational field and outline what you consider a suitable complete program of preparation for it.

**3. How to get acquainted with vocations.** The problem of acquiring the vocational information necessary for an intelligent choice of a job is much more difficult now than when our economic life was of a simpler type. The following are a few suggestions on how to do it.

*Take courses which deal with different vocations.* If such courses as these are available in your particular school or college, the best thing to do is to take them, for reasons already mentioned.

*Visit and observe business establishments.* Take every opportunity to go through a factory to see how it operates, or to inspect a mill or shop to note how everything is done. No amount of study about occupations can quite take the place of this natural and real study of them in operation under normal conditions.

*Talk with persons in several forms of work.* You can learn a great deal about the fine points of a job by talking to the workmen who are engaged in it. Often what appears to be a routine or simple form of work really involves quite a number of technical points and elements

of artistry which are not apparent on the surface. Also a certain job may seem very attractive on the surface but when you get the inside view of it from the men who are engaged in it you may find it to be the opposite.

*Do part-time work of various kinds while in school.* The boy who works his way through high school and college at odd jobs gets a tremendous amount of good practical training and information. The benefits of such work are increased if the job is different each year, because the experience is more varied. If you work in a garage one summer, wrap packages in a downtown store at Christmas time, deliver newspapers during the spring, and act as office boy for a business firm during the next summer, you come in contact with a wide variety of types of the world's work. You have a chance to pick up a great deal of information by observations on the side, even when your own work is of a routine nature.

*Look over journals written for different types of tradesmen.* You can acquire much information about a job by reading a journal which is written for the workmen in it. For example, the journals written for electricians, plasterers, or for civil service employees, will contain bits of valuable and interesting information.

*Make systematic study of any occupation which you are seriously considering entering.* The methods that have been mentioned so far are really incidental and very elementary. If, after having become definitely interested in a certain occupation, you undertake a much more systematic and thorough investigation of it, you will be amply repaid for your work. You may make this thorough study in part by consulting United States census reports, which give data regarding many aspects of it, and upon which you can rely as being truthful and accurate. Any good library contains numbers of vocational



books of a more or less specialized nature. It would be worth your time to read or scan these for further information. Also, it is possible by looking in the *Reader's Guide*, the *Industrial Arts Index*, and similar indices to periodic literature, to find brief articles on many specialized aspects of vocations. When you realize how important is your choice of a life work and how difficult it is to make it intelligently without adequate information, you will see that the time you spend in getting this information is a fine investment in success.

- Assignments:* 1. With how many different occupations do you feel that you have a fair degree of familiarity?
2. Report the methods or circumstances under which you acquired such acquaintance with vocations as you have.
  3. What sources of vocational information do you know of which are available to your fellow students?
  4. Check through the list of occupations in a United States census report and see how many of them are totally unfamiliar to you.
  5. Interview some person about his occupation and find what he thinks are its strong and weak points.

**4. How to make the best adjustment between general and specialized training.** When to specialize and how much to specialize while getting an education are questions of the first magnitude. The following are some answers to these questions.

*Train yourself to be a citizen and a human being as well as a workman.* You spend only a small portion of your total twenty-four-hour day on the job, and the remainder in sleep or recreational activities. You should educate yourself for the time you are going to be off the job as well as for the time you are going to be on it. Furthermore, you should educate yourself so that you have something to think about while you are at work. Your training in vocational lines should not destroy your sense of human values, nor your interest in other people.

*Avoid specializing until you are sure of what you are undertaking.* Hasty choice of a vocation, followed by an intensive program of training for it, and that in turn followed by disillusionment and the discovery that the work is not suited to one's interests and aptitudes, is a familiar occurrence. In previous pages suggestions have been given as to methods of making an intelligent selection of an occupation; we need only to repeat here the general warning to look before you leap.

*Take theoretical courses for the sake of adaptability and ultimate advancement.* Occasionally, students feel that it is not worth while to take courses in science, English, psychology, mathematics, and similar lines, because they cannot see where they can convert this training into dollars and cents. They prefer something that is intensely practical and that offers immediate financial returns. Training which gives such immediate returns often fails to prepare for ultimate progress or for adaptability to changed conditions. If you take a very practical course in bookkeeping you may be able to keep books of one particular type immediately, but if you wish to prepare for work in any and every kind of an office and to be ready to meet new situations that arise when special systems of accounting are introduced, you should study the basic theory of accounting and of economics.

*Be a generalist within your chosen field, rather than a minute specialist.* It is preferable at first to specialize in a field rather than in a small subdivision of it. If you are going to prepare for medicine, train yourself for general medical practice and then you can specialize later. If you like machinery and desire to go into industrial work, take first a general assortment of training in industrial courses, in order to know the field as

a whole. Then at a later time focus on some particular work.

*Be sure to specialize before your education is finished.* What has been said so far would seem to favor general education in preference to specialized education, but this is not the case. Both are very much needed, and to neglect either is unfortunate. Before you quit school and go to work, you should bring your education to a focus on something in particular. You should avoid leaving school without any practical training with which to earn a living. For this reason take stock of your financial condition and of the other factors determining your probable stay in school, and make sure of getting some kind of practical training before you are forced to quit school and go to work. To go away from school without training for anything in particular may be compared to stopping the building of a house after laying a good foundation, erecting solid walls, and installing fine woodwork, but without putting on the roof.

*Carry general and specialized training along together in the latter part of your school career.* Your practical and theoretical studies both mean more to you when they are studied together. If you decide on your specialty long before leaving school, you can study it along with your theoretical subjects, and the two elements are thus correlated in such a way that each is improved by association with the other.

*Assignments:* 1. Prepare the arguments on both sides of the issue of general *versus* specialized training.

2. When should a student specialize?

3. If you had to omit either the general or the specialized training, which type would you omit?

4. How can you make your general and specialized training each help the other to the greatest extent?

**5. How to acquire skill in the use of tools and machines.** Most of the practical arts involve habit-formation, learning how to use tools, how to operate machines, and how to carry out manual processes. The following are some suggestions on how to do these things.

*Take advantage of every opportunity for laboratory work.* The development of skill calls for a great deal of practice. Laboratory work is more important in the practical arts than it is in the natural sciences. In fact, it is absolutely essential. Whether the operation is learning how to beat eggs, set the teeth of a saw, or operate a Monroe calculating machine, the basic first principle is that of practice.

*Start right.* The first associations you form in learning a new skill have more to do with the ultimate results than any units of practice that come afterward. It is very important to make a correct start so that nothing is to be unlearned, and then to allow no exceptions, lapses, or departures from the correct method.

*Learn to work in the standard way.* The attitude represented by the expression, "This time doesn't count; I am just doing it for practice," is very unfortunate. Even though an exercise is a practice task, it should be done in exactly the same way as if it were a part of your regular job. You should practice under standard conditions, with the standard kind of tools, carrying out operations in the standard way. If you are making biscuits in the cooking laboratory, it is preferable to learn to make them in such quantities as would be used in family cooking, rather than in such small quantities that you have to measure your flour by spoonfuls. The same principle applies to all the other practical arts.

*Observe an expert as he works.* Imitation is very essen-

tial in learning most of the practical skills needed for a trade or occupation. Whether you are learning to become a surgeon, a machinist, or a stenographer, take advantage of every chance to see an expert and to analyze his methods of work.

*Try the job yourself and have an expert criticize your efforts.* There is a big difference between knowing how to do something and being able to do it. Observation of an expert will give you ideas as to how to work, but when you try to carry them out in actual practice you make mistakes of various kinds. Constructive criticism from someone who is able to analyze your work keenly and critically is worth a great deal.

*Analyze the job into its elements.* In recent years job analysis has come to be an important means of formulating training programs for vocational work. By job analysis is meant the dissection of a job into its units of activity, or breaking it up into its parts. The cook's recipe is an illustration of a simple type of job analysis, and makes it possible for an amateur to get fairly good results in cooking a new dish. In more recent years the movement to reduce occupational activities to simple elements comparable to the cook's recipe has gained considerable headway. If you take time to study your job and to list its elements in the order of their performance, you are likely to make better progress. This does not mean, however, that you should practice one element at a time until it is perfected and then repeat the second until you master it. Your practice should be devoted to carrying out the job as a whole, but at the same time you should be conscious of the elements that enter into it.

*Learn the theory of your tools, materials, and processes.* You make greater progress in learning if you under-

stand the theoretical background than if you work blindly. Knowledge of the how and the why makes work more interesting and more successful. Take time off from actually doing the job to think about how it is done and why it is done that way.

*Assignments:* 1. Give as many rules as you can for developing skill in typewriting.

2. How many of the rules for typewriting would you apply to the other practical arts?

3. Compare the method of learning to sew with that of learning to do automobile repair work.

4. Compare the relative values of skill and insight in the vocational world.

**6. How to get practical experience to supplement school training.** The expense of introducing the practical arts into the curriculum is so great that the school training often tends to be a bit theoretical, academic, and impractical. Colleges of engineering and of business administration are sometimes criticized because the graduates lack understanding of practical situations, even though they are well trained in the fundamental principles. There are several ways in which you can remedy this situation. The chief one is to supplement your practical arts training in school by more concrete contacts with the real work outside. The suggestions which follow will be of service in connection with this problem.

*Put your school training to use at home.* Most of the school courses in the practical arts have their counterparts at home. For example, girls in the cooking and sewing classes have splendid opportunities for putting their training to work immediately in home connections. Similarly, boys in courses in woodwork have an opportunity to be of service in doing repair and construction work about the house and yard. Students in the electric



shop may take responsibilities for the repair of electric light fixtures, door bells, radio sets, vacuum cleaners, and other electric apparatus in the home. A course in auto shop should pave the way for practical work on the family automobile, including grinding valves, and adjusting brakes. Courses in bookkeeping at school may be put to use in connection with personal or family finances; courses in agriculture may issue into such home activities as raising pigs, corn, flowers, and vegetables.

*Seek part-time or vacation employment.* In addition to these incidental applications of the practical arts in the home environment, it is possible for considerable training to be obtained through work after school, on Saturdays, during the holiday periods, or summer vacations. If you are taking a commercial course you ought to work during the Christmas vacation in some downtown store.

*Use the school employment service.* Most large schools and colleges now have some sort of placement bureau or employment service to help make connections between students who need work and employers who need help. By keeping closely in touch with such offices or bureaus you have an opportunity to make numbers of helpful contacts and get a variety of practical experience in the lines for which you are taking training.

*Do not hesitate to accept work of a routine or unskilled labor type if it offers an opportunity to observe the more skillful forms of work for which you are preparing.* Make the most of your time and your opportunities to learn a job by absorbing the atmosphere and viewpoint of the workers in that job. A good way to do this is to get some kind of elementary, simple, or routine work for which you are qualified and thus get a chance to observe

the master workmen in the trade or occupation. If you keep your eyes open while you are working in such a routine capacity you may learn about the various jobs in the establishment and may later be qualified for administrative or supervisory responsibilities over the whole set of men under whom you previously worked as a helper.

*Enroll in a cooperative vocational school if your situation demands it.* If you are learning a definite trade and your financial situation forces you to stop and earn money, it is well for you to take advantage of such opportunities as are offered in some of the larger city school systems for enrolling as a cooperative or part-time student. An arrangement whereby you study in school for a certain number of days or weeks and hold a job in an industrial or business establishment during the rest of the time is fairly common. Many schools have worked out systems whereby two boys alternately hold one job, one of them working at it while the other goes to school. This offers opportunities for you not only to pay the cost of going to school but also to correlate your practical work with the more theoretical training of the school, for the advantage and improvement of each.

- Assignments:*
1. Report what you have found to be the most satisfactory ways of getting practical experience in your chosen occupational field.
  2. Make your contribution toward making up a composite class list of all the jobs in which students are working to earn money in your school.
  3. After having completed the list just mentioned, criticize it as regards the educational by-products of the work.
  4. What values can you mention that result from alternation of training and experience?

**7. How to get variety, range, or rotation of practical training.** Education through experience is subject to the

law of diminishing returns. You learn more during the first month you work at a job than during the second month, and considerably more than during the third, fourth, or fifth. You get more for your time and effort if you distribute your experience over several different types of work than if you concentrate for a long time on a single one. The problem of securing variety or range is, therefore, one of considerable importance. The following suggestions are offered as solutions of this difficulty.

*Take several different shop or laboratory courses in school instead of following one type through to intensive specialization.* The policy of specializing very minutely by taking a great many courses one after another in the same line may qualify you for a good position of that one type but may leave you stranded at a later time when jobs are scarce. A policy of sampling or rotation in shop courses would make you more adaptable.

*Shift from one job to another as soon as you get well adjusted.* Stay in one position until you learn most of what it has to offer and then deliberately take some other kind of work where you will learn something new. Trading from one job to another will soon train you broadly and comprehensively, and may even qualify you for an administrative or executive position.

*Distinguish between shifting jobs for education and shifting for mere whim.* What was just said about trading jobs should not be mistaken as a justification of a policy of dilly-dallying, nor as an encouragement to become one of the numerous migratory workers who never settle in any one place. The policy is recommended for the time during which you are getting your education rather than as a policy for the rest of your life. When you shift from one job to another, be sure you are trying to learn

something, and that your shift is not due to some petty grievance.

*Sacrifice income for the sake of education.* The policy of straying from job to job will necessarily call for some temporary sacrifice of financial return, because you can earn less in a new job while you are learning it than you did in the previous one which you had already mastered. Employers naturally like to keep their men permanently, or to reduce the rate of labor turnover. Consequently, they reward permanency in terms of wages. If you are not careful, therefore, you will let immediate returns outweigh ultimate educational values, and will become a permanent fixture in a job which offers limited opportunities.

*Get into a large organization or establishment so that you can have a variety of contacts without actually changing employers.* A big company that has a diversified program and a wide range of jobs gives you a chance not only to get variety by shifting about from one department to another within the company, but also to observe the work of other employees.

*Do extra work and odd jobs that are out of your line of duty.* Even though you are engaged in some regular work which has little rotation or variety, you will probably have frequent opportunities to try your hand at tasks which are not particularly within your line but which your employer will be glad to have you do. A person who is alert and eager to learn a trade can get quite a bit of training in this fashion.

*Assignments:* 1. State all the advantages you can of changing positions and kinds of work frequently.

2. State the disadvantages that come from the above policy.

3. How would your policy in this respect differ if you aimed to be a big executive as contrasted with a regular workman?

4. How does the interest of the learner coincide and how does it

differ from that of the employer in connection with rotation of work?

**8. How to learn the theory that relates to practical pursuits.** The need of combining theory and practice is very great. You not only need practical training, but also a scientific or theoretical background for it. The following suggestions relate to methods of achieving this result.

*Correlate practical and academic subjects.* The ordinary academic subjects present basic concepts and principles which apply to the vocational and practical courses. If you carry the two along at the same time you may be able to make each supplement, enrich, or interpret the other. Thus as you study mathematics and science you may solve problems that confront you in cooking, bookkeeping, or agriculture, and as you study your practical subjects you may take special pains to look up needed information from your ordinary academic courses. The whole point is that your theoretical and practical courses will not mix unless you take the trouble to make them mix.

*Take related semi-technical courses.* For present purposes the curriculum may be classified into three divisions, academic subjects, semi-technical subjects, and the practical arts or vocational courses. We have already mentioned the theoretical values of the academic subjects, and are now ready to consider the second division. We may illustrate by such a subject as economics. Suppose, for example, that you are studying bookkeeping and accounting and wish to learn the underlying theory or science. The subject of economics would have most to offer in that connection. It is the basic science underlying all of the practical courses in the field of business. Similarly, if you are studying the field of salesmanship

and advertising, a course in psychology should give you an understanding of the human-nature element. Other illustrations might be given, but the point is that if you wish to master a given vocation you ought to take one or more closely related semi-technical subjects or courses.

*Get technical books from the school or public library.* Many students are not aware of the fact that books on almost every vocational or practical art are easily available. A large library contains whole shelves of books dealing with food, cooking, serving, manufacturing of foods, food inspection, food preservation, food consumption, marketing, and so on. By going to another section of the library, you find similar collections on the agricultural occupations and the industrial pursuits. If you wish to get the theoretical background of the practical subjects, all you have to do is to search for the desired information; the library is almost certain to contain some of it.

*Proceed from practice to theory, rather than from theory to practice.* If you take a practical problem as your starting point and seek its explanation in the field of science and theory all your theory necessarily relates to practice. Theory functions a great deal better if learned in this way than if learned first in a general fashion and followed by a quest for some use to make of it.

*Assignments:* 1. How much science or theory does the average workman need and use?

2. Explain why you may know science and yet not apply it.
3. What theoretical subjects would contribute most to the profession of medicine? Engineering? Agriculture? Salesmanship?
4. Criticize the policy of some industrialists in taking all the planning and brain work out of the shop and putting it into the office.

**9. How to be economical in time, money, and materials.** The question of economy is uppermost in practically



all of the vocations as well as in the unspecialized practical activities of everyday life. The following are some suggestions on how to be economical.

*Select wisely.* Economy is as much a problem of consumption as of production. Efficiency in production is of little value if it is followed by inefficiency and extravagance in the consumption of what is produced. Every person needs to study the art of selecting, buying, or marketing, in order not only to save money on what he buys, but to get the kind of goods that will render the maximum service in the situation where they are to be used. The most economical person is the one who spends wisely rather than the one who spends little or not at all.

*Acquire the information that will enable you to judge values wisely.* In order to be economical you have to know the factors that enter into the comparison of goods. Someone has expressed this as learning the ethical value of the dollar. In other words, it is learning to compare goods and activities as to their equivalents in services and satisfactions.

*Invest in efficiency.* The highest type of economy is that in which you spend your time or effort to purchase labor-saving devices or special tools and equipment. These will enable you either to increase your output or reduce your cost of output. To spend money for good tools, and to take the time to keep them in repair, will ordinarily result in greater production in the end, and will be a good investment.

*Plan beforehand.* Careful planning is a great aid to economy. If you are working in the wood shop you should know very definitely what you are trying to produce before you cut or shape your material. If you are making a dress in the sewing class, you may be able to save a few yards of goods by spreading all the pieces of your

pattern out on the goods and shifting them around in such ways as to reduce the size of the scraps. In economizing time, you may do the same thing by planning a budget or schedule for your different interests and activities. In spending money the financial budget is simply a form of previous planning that enables you to keep your expenditures in proper proportions to one another.

*Keep records of your results and use them to guide your later efforts.* Some persons who "cannot see where their money went" could spend it much more economically if they kept records of their expenditures and analyzed them from time to time. Each year's financial budget may be based upon the results of last year's expenditures. The same thing is true of your time budget.

*Use large-scale rather than small-scale procedures.* The industrial world has accomplished great economy by a type of organization which permits doing one thing at a time in a systematic and large-scale way. This is due to the fact that quantity production is subject to the law of increasing returns, or the law of decreasing cost. If you can organize your work or activities on a large scale you take advantage of this fundamental economic law. One simple illustration of this is involved in quantity purchasing as contrasted with purchasing in dribblets.

*Eliminate waste motion.* Just as the swimmer in the early stages of learning spends more energy in useless strain and useless movement than he does in the act of swimming, so the workman on the job is likely to waste more of his energy than he uses. Studies of bricklaying made by efficiency experts have revealed that in some cases the workman spends three-fourths of his energy in such movements as turning around, stooping, and lifting, all of which could be eliminated by a rearrangement of the materials with which he works. The mere device of

arranging your tools, materials, and equipment in orderly fashion enables you to save time, because you can pick up directly the tool you need instead of having to fumble for it. The average person could do a great deal more with the same amount of time and energy if he would simply eliminate the useless steps, the false starts, and the random movements that have crept into his work.

*Save the fragments.* In a sense the little sources of waste are more serious than the big ones because they are much more numerous and are more likely to be overlooked. Economy calls for planning your work so that there will be a smaller number of fragments. Often these scraps can be put to by-product uses of some kind. For example, the writer on visiting the Ford Motor Company plant was told that the company profits to the extent of thousands of dollars every year simply by collecting and using the papers in which the workmen bring their lunches to the factory. They also save considerable sums by salvaging the iron filings and turnings, and even the oil that adheres to these bits of metal.

*Beware of false economy.* What has been said in regard to saving should not be taken as a justification for spending fifty cents' worth of time in salvaging twenty-five cents' worth of material, nor for other disproportionate and unbalanced types of economy. It is possible to be extravagant by spending much in order to save little. The whole proposition goes back to our statement early in this section, that a good sense of relative values is needed if you are to make wise choices and get the greatest possible value out of each expenditure.

*Assignments:* 1. Estimate the amount of waste that takes place in your particular shop or laboratory course each week in terms of dollars and cents.

2. Cooperate with other class members in making a composite list

of all forms of waste which are observed any time in connection with any of the practical arts courses. Let each member report any specific act of wastefulness that he observes, however large or small.

3. Classify the above items into the major types or groups into which they fall.
4. What are your own personal shortcomings in the matter of economy or thrift?

**10. How to combine beauty and utility.** The fine arts and the practical arts are very closely related and should go hand in hand in school. Efficiency without beauty leaves much to be desired. Below are suggestions on how to be an artist as well as an artisan.

*Take a course in art.* If you expect to achieve beauty of output in such lines as sewing, woodwork, machine shop, landscaping, or architecture, you should make a definite study of art principles. Thus you will learn to evaluate the elements of line and form, pattern and design, light and shade, rhythm, variety, color harmony, and symmetry. Just as a little instruction in how to look at fine paintings enables you to see more than you could possibly see previously, so a little instruction in art will enable you to criticize your practical creations more constructively. Courses in art from the standpoint of appreciation rather than of production will furnish a great deal of this foundation.

*Do good work so that beauty will not be marred by imperfection.* In a purely negative way good workmanship is an important factor in beauty, because poor workmanship detracts from the beauty of the product. A plain but well-made object may be more or less neutral in the artistic sense. That is, it may lack highly artistic qualities; if, in addition, it is poorly made, it becomes decidedly ugly. Good workmanship is a means of avoiding ugliness.

*In handwork try out your talent for decorative touches.* When you are operating a machine and turning out a standardized article there may be little room for the application of art principles, but when you work by hand you have more room to express a creative impulse. In this type of work you may well try new combinations, new schemes, or new designs, and give attention to the many little things that contribute individuality or distinctiveness to your product.

*Cultivate natural and simple beauty rather than gaudiness or show.* Someone has said that it is better to beautify useful articles than to find a use for beautiful articles. Many of the products of the shops could not possibly be beautiful in the situation where they are to be used unless they were at the same time well suited to the purposes which they were to serve. Simplicity, naturalness, harmony, and appropriateness to the environment are basic elements in beauty. If it were possible to paint a beautiful picture representing birds, flowers, or trees, on the bottom of a frying pan with a paint that would not be influenced by heat, it would be unwise to do so because of the incongruous situation that would be created. Similarly, industrial concerns sometimes overshoot the mark in their efforts to produce beautiful articles, as in the case of a concern which placed on the market a domestic heating stove designed very much like a victrola and finished in metal that resembled wood. Wood may really be more beautiful than iron, but not in the case of a heating stove. The principle that was violated here was that of appropriateness.

- Assignments* 1. Make a list of the qualities or elements which must enter into any useful article in order that it may be beautiful.
2. Analyze some artistic shop or laboratory product and point out the specific artistic elements included in it.

3. Analyze some ugly piece of workmanship in the classroom and decide what, in particular, causes the ugliness.
4. Examine a number of different styles of chairs, tables, or other pieces of furniture, and compare them as regards the various artistic elements.

### **11. How to develop high standards of workmanship.**

One of the big problems in modern industry is that of getting workmen to do as good work as they are able to do. There is less motivation to do a high type of work now than there was under the old system of handicraft production when each man made the complete article himself. A prominent industrial executive, when asked what is the biggest need in the education of men in industry, replied that it is honesty. He meant that there is need for teaching men to do the work up to the standards of which they are capable. The following suggestions are offered to overcoming this difficulty.

*Study the work of the masters or experts in order to get inspiration for good workmanship.* Your own crude product may look fairly good so long as you are comparing it with the crude products of other students. But when you match it with the product of a trained expert and see how much difference there is between the two you are likely to note much room for improvement.

*Pay the price in the form of practice.* If you expect to become a skilled workman, you have to go through a great deal of routine practice, some of which may not be very interesting. Nevertheless, it is required if you are to perfect your habits and master your technique. Good workmanship is a matter of habit formation, not only in the sense of improving your skill but also in the sense of doing your best at all times. It is said that the great pianist Paderewski spent hours and hours of practice daily simply to maintain the high standards of musical ability which he had already built up. If you are not



willing to pay the price in the form of practice you probably will never be more than an ordinary type of workman.

*Do not permit little lapses or exceptions.* The attitude expressed in the words "This time doesn't count," is fatal to the development of good work. One exception can do more to upset your progress than many repetitions by the correct method can restore. You should always be "on your best manners" and strive for a perfect product even though you may know that you are working only on practice material in a make-believe situation.

*Seek criticism of your output.* When you have done your best and have produced some kind of product, the next step is to have it analyzed by an expert who will point out its merits and demerits, and direct your attention to the elements you have overlooked. You should seek criticism and not try to hide your shortcomings from your teacher, because criticism is indispensable to the development of habits of good workmanship.

*Compete for honors, prizes, and other forms of recognition in school exhibits.* One of the most powerful motives for good workmanship is the realization that other persons are going to see what you have turned out and are going to admire what you have done well. For this reason the practice of exhibiting the products of the shops and laboratories is psychologically sound and very helpful to members of the classes. You will probably work a great deal harder if you once set out to win recognition in such an exhibit, than if you simply worked from day to day without seeking notice from others.

*Assignments:* 1. What are the factors in modern industry that make for low standards of quality in work?

2. How much poor workmanship is due to lack of skill and how much to lack of will?
3. What is your own greatest difficulty as regards maintaining a high quality of workmanship?
4. In what lines of work is high quality of little value?

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## CHAPTER X

### PHYSICAL EDUCATION AND HEALTH

*"What a piece of work is man!"*

THE BIBLE.

The importance of physical fitness as an aim of education is now more generally recognized than it has ever been before. The physical education program in most high schools and colleges is a two-fold one which we might roughly classify under the heads of play and of health. In the present chapter we shall deal with both of these phases.

**1. How to enjoy seeing games played by others.** The art of being a good athletic fan should be cultivated. If you do not enjoy a big football game you have neglected one phase of your education. The fact that millions of persons annually attend athletic contests suggests that sports have great recreational possibilities. In the paragraphs below are a few suggestions on how to make the most of these recreational advantages.

*Get a season ticket and attend the games regularly.* The first principle in learning to enjoy athletic contests is the principle of exposure. If you make the first step by purchasing tickets for the year, you put yourself in the control of certain forces of crowd psychology that are almost certain to make an ardent fan of you by the end of the season.

*Provide for physical comfort during the game.* Such minor matters as having a seat where you can see to advantage, and taking along extra wraps, blankets, cush-

ions, and other accessories as needed, will not guarantee you enjoying the game but will remove some of the causes which might interfere with your enjoyment.

*Attend the game with friends who understand and enjoy it.* Attending a game alone will give you some aid in developing enjoyment of it because the example of the hundreds or thousands of other persons in the grandstands will automatically have its effect on you. If, however, you supplement this general force of crowd psychology by selecting a few close companions with whom you sit and from whom you can get information and stimulation on particular points in the game, you increase your possibilities of enjoyment.

*Learn how the game is played so that you can follow it intelligently.* You enjoy the game more if you learn the rules and read something about the types of strategy that are employed in playing it. You should know the objective of the game as a whole and be reasonably well informed as to the means by which each side gains its objectives. A little time spent in reading athletic manuals, which may be obtained for a few cents each, will be well worth your while.

*Play the game yourself as an amateur.* You may not hope ever to be a member of the football team nor to compete as a player in the world series of baseball, but if you indulge in these sports in a small way on a vacant lot, you will learn how to enter into games more enthusiastically when you see them played by experts.

*Read the sport page before and after the game.* Reading the sport page provides you with a certain amount of information which you may use to good advantage when you watch the game. You may have read about some player who is expected to do wonders and thus be prepared to watch him more carefully. You may have

read the speculations of the sport writers as to whether the visiting team is really stronger than the home team. You have a chance to absorb the general gossip that is going around so that when the time comes you enter into the situation with a number of questions, problems, or points on which your curiosity is aroused. In this manner you see more and have a richer experience. Likewise, when you turn to the sport page the next day to see the write-up of the game you have the pleasant sensation of finding your own impressions verified by the sport writer, or it may be that you get the benefit of having your reactions checked up by the more expert judgment of someone who understands athletics better than you do. It is just as natural to dwell on a game after it has been finished as it is to tell your dreams after you get up in the morning.

*Follow players as individuals during the game.* Many athletic fans get considerable enjoyment out of having a list of the names and numbers of the players and of following their individual heroes play by play throughout the game. A man becomes a person rather than merely a unit in the team when you know his name and follow him individually. In fact, many fans report that they can get added enjoyment out of hearing a game by radio because the announcer reports the names of the men who make the spectacular plays, thus helping them to follow individual players.

*Root for one side.* You get a great deal more enjoyment out of a game when you are a booster for one side or the other than if you observe it simply as a disinterested spectator. To witness a game merely as an exhibition of skill when you have no special interest in the outcome is ordinarily a most uninteresting procedure. If you are not already an ardent fan, it is better for you to attach

yourself to one side or another and go through the game hoping that your side will win. The ups and downs of the game will then have more meaning for you and you will enjoy it more.

*Give credit for good playing even when done by the opposing side.* What was just said about rooting for one side should not be mistaken as a justification for a narrow-minded and unsportsmanlike attitude toward the opposing side, nor should it be permitted to hamper your enjoyment of good playing by the opposing team. You should be able to appreciate a beautiful play regardless of the side making it, and should be willing to give credit for good playing whenever it is done.

*Assignments:* 1. Tell the class how you got interested in your favorite sport.

2. What types of games do you not enjoy? Why?

3. Find out who are the five best baseball players in one of the major leagues and report the methods by which you secured this information.

4. Be prepared for a test on today's sport page news.

**2. How to learn the directions, rules, and fine points of games.** Whether you are a player or a spectator, you have good reason to learn the theory, principles, or science of the game. This becomes especially important if you hope to win a place as a member of the team. The following suggestions are offered to aid in this phase of the study of athletics.

*Devote study to games as well as to books.* It is difficult to succeed in athletics if you are not willing to study. If you do not know the rules, you may spoil the game or ruin the chances for your side to win. You may overlook some opportunity to score for your side merely because you did not have the necessary information, or had not reduced it to habit so that it would function in time to be of service to you. Not only is it necessary to



study the rules but also the policies, the types of plays, and the theory back of different formations or strategies. Good headwork is just as essential as good footwork or good handwork because many problems have to be solved very quickly; otherwise, the chance to cash in on your knowledge of the game will be past before you get into action.

*Think of your coach as a teacher.* The coach is just as truly a teacher as the instructor in any other school or college subject. You will rely upon him to a considerable extent for your major training in the theory and fine points of the game. The services of the coach usually are not available for all persons in school, and many will have to educate themselves in the fine points of the game.

*Correlate actual playing with the theory of the game.* If you expect to play well, you will have to reduce the theory to habit rather than merely storing it in your memory. Otherwise, it will not function when you need it. For that reason, your study of the rules and principles of the game should be closely correlated with the actual playing. Study about a game, try it out on the field, then study it some more. By thus alternating theory and practice you have the best chance for the two to help each other.

*Buy a book of rules and a manual on how to play the game.* It is possible to get handbooks on most games for very small sums. The dealers in sporting goods usually have manuals of rules and also of playing technique. These are usually written in such simple form that anyone, however meager his previous knowledge, can follow and understand. Invest twenty-five or fifty cents in such a manual for the sake of your self-education.

*Observe experts as they play.* You learn a great deal

about the fine points of a game by watching experts or professionals perform. It may not always be possible for you to copy their techniques on account of differences in skill, but a careful study ought at least to show you what to strive for in your efforts to learn. Incidentally, you will be better able to observe experts intelligently if you make some previous study of the rules and principles of the game from such sources as have already been mentioned. Your observations will be even more valuable if followed by further study from printed sources.

*Read the critical review of games in sport publications.* Go to see a game and study it for all you can get out of it; then read the critical write-up in the daily newspaper the following day. You will have an opportunity to clarify your ideas and to increase your insight; the next time you watch a game you may be able to see more in it and to get more of the fine points of playing technique.

- Assignments:* 1. How much knowledge about games is needed in order to enjoy them? To play them?
2. Where would you go to buy a rule book for baseball or football?
  3. Name three of the more important rules for each of three athletic games and tell where you learned them.
  4. Make a list of five different causes of penalties in football, state the amount of the penalty in each case, and tell where you got your information.

### **3. How to acquire permanent recreational interests.**

If your play activities cease when you finish school, you have failed to accomplish one of the biggest aims of physical education. That is the interest in play as a permanent source of recreation. We shall now consider some methods of developing these permanent recreational interests.

*Put play into your regular schedule.* You form habits by practicing those habits. If you wish to develop habits of

engaging in physical play you should give play a place in your daily life. Make provision for recreation in your daily budget. Play so regularly and so continuously that it becomes a habit. Then it will persist after you quit school and adopt a different scheme of living.

*Put enjoyment above the good you get out of the activity.* You should play in the spirit of play rather than in the spirit of work. You should keep uppermost the fun you are getting rather than the benefit. Play because you like it rather than because it is good for you. You will undoubtedly derive many benefits from playing, but you do not need to be self-conscious regarding them nor sacrifice your interest in the game in order to derive them. In other words, give yourself a chance to enjoy physical activities and do not treat them as a form of medicine.

*Stress games rather than gymnastics.* Cultivate recreational interests in the field of games and sports rather than in the field of gymnastics. It is exceedingly difficult to keep up regular habits of doing gymnastic exercises, as is exemplified by the fact that virtually all the army men who did gymnastics so regularly while in the service abandoned them since returning to civil life. Games and sports are much more in harmony with human nature than are gymnastics and calisthenics.

*Learn games that are adaptable to many seasons and situations.* If play is to continue permanently it needs to be of a flexible and adaptable type. Probably it should be suited to many different seasons of the year, to many different types of geographical environment, to groups of varying sizes, and also adaptable as to the length of play period so that you can play it either for ten minutes or an hour. A sport which cannot be indulged in except under highly standardized conditions by a rigidly prescribed number of players for a definite period is not

likely to be indulged in at all except under the more or less regular conditions that prevail in school. The sports that are likely to function best in life outside of school are those which will fit in at odd moments in irregular situations. Among these are tennis, riding, swimming, golf, hiking, hunting, mountain climbing, etc.

*Learn several games as an amateur rather than one as a professional.* The policy of extreme specialization in athletics leaves you unqualified for most of the athletic opportunities which will come to you as an adult outside of school. You should learn at least four or five different kinds of sports which can be followed up out of school instead of indulging in any one to the point of extreme specialization.

*Develop a few hobbies that you can do well.* What was just said against extreme specialization needs to be qualified by the suggestion that you should learn a few amateur sports well enough to take pride in them. You derive a great deal of satisfaction from playing a good enough game that you are not the poorest player around the field, court, links, or pool. You are more likely to follow up your interests permanently if you have two or three amateur activities of this kind in which you can take reasonable pride.

*Avoid surfeiting yourself on one type of activity.* It is possible to reach the saturation point in play as well as in eating a particular kind of food. It is just as unwise to indulge in a game to the point of saturation as it is to indulge in bananas or tomatoes until you wish never to see them again. A reasonable amount of rotation, sampling, or changing from one thing to another will contribute to your permanent interests in recreation.

**Assignments:** 1. What sports are best as permanent recreational interests in your own community?

2. Report your play hobby and tell what are its strong points.
3. Interview five prominent business men as to their recreational interests, and get their reasons.
4. What are the limitations of the following from the standpoint of permanent recreational values: (1) golf, (2) tennis, (3) dancing, (4) swimming, (5) football.

**4. How to become a skillful player.** Acquiring skill in a game or sport is subject to the same laws of learning as acquiring skill in any other line; it is primarily a habit-formation process. The suggestions here are in large measure simply the general laws of habit illustrated in terms of physical education.

*Learn correctly from the beginning.* It is well to avoid forming bad habits in the beginning because it is very difficult to unlearn them. It is preferable to go slowly until you are sure you are doing correctly, and gradually increase your speed to the standard rate after you have mastered the technique.

*Learn by imitation.* Watch other players and copy their actions. Alternate between playing the game and observing others as they play it. You will profit not only from the observation but from the playing between observations. Ask a good player to show you his methods and thus get him to emphasize the particular elements which it may be difficult for you to detect. There is much to be learned by imitation when the person imitated does not know you are studying his technique; if you can get his cooperation and induce him to make a demonstration of his technique you can learn still more.

*Play against others who are better than you.* Having a better player for an opponent is a stimulus toward improvement of your own playing. Your opponent not only sets a good example, but he provides splendid motivation and induces you to put forth your utmost effort to beat him. It is possible that this may be overdone,

particularly of you play against someone who is so much better than you that you do not really have a chance at all. A little success is favorable to learning.

*Practice often and regularly.* The old adage, "Practice makes perfect," is as important in physical education as elsewhere. You can never be a good player unless you practice regularly. It is well to distribute your practice periods so that you do not become unduly fatigued, and yet have them close enough together that you do not get out of form from one time to the next.

*Profit from criticism by your coach.* Your practice is very greatly increased in value if it is accompanied by criticism. Furthermore, you can get more criticism and have it given in a more helpful way if you seek it and show your appreciation of it than if you act self-satisfied or seem a bit crestfallen when your best efforts do not bring forth praise.

*Play with your mind as well as with your muscles.* If you wish to be a good player, you have to be nimble with your wits as well as with your body. You have to be mentally alert. It is necessary to think rapidly and act quickly. Be thoughtful and analytical throughout the game. Use such leisure time as you have at intervals during the game to plan ahead and think what you would do under this, that, or the other emergency. Thus you have courses of action planned and ready when the situations arise for you to put them to use.

*Analyze the elements involved in playing.* The complex act of playing consists of a number of smaller subdivisions, each one of which may be thought of as a unit in itself. Thus, baseball may be analyzed into such elements as throwing, catching, batting, etc., or football into kicking, passing, tackling, and other elements. Each major sport is of such a complex nature that if you wish



to become a master of it you have to think of these individual units separately, and study how to improve each one individually. If you concentrate on one of these at a time and study about it until you know how it is performed, you get a greater degree of focalization on the essential steps than you could if you practiced the game as a whole, in general, or unanalyzed.

*Practice on particular operations intensively.* In order to become a good football player it is often well to engage in practice in which you do one unit of the game over and over to the point of real mastery. Thus you may spend considerable time in such exercises as punting, place kicking, drop kicking, forward passing, etc. By doing so you get concentrated practice in one thing until you raise it to the level of perfection that is needed. Some of this practice may not be nearly so interesting as actual scrimmage, but it is necessary in order to provide the required skill in certain essentials which are likely not to be given proper emphasis in scrimmage. The main caution that needs to be considered in this connection is that if you were to do all of your practice in this form you would still find yourself unable to play the game because of your inability to put these various elements together. It is necessary, therefore, along with your specialized practice on particular elements, to indulge in a considerable amount of playing the game as a whole in order to unify the elements.

- Assignments:* 1. List ten qualities that characterize the technique of a good football player.
2. Compare the above ten qualities with those required for tennis, pole vaulting, and swimming.
  3. What were your greatest difficulties in learning to play skillfully the game which you now play best?
  4. What suggestions from your experience can you give another person on how to play the game which you now play well?

**5. How to win and hold with credit a place on the athletic team.** A place on the team is an honor to which any student may well aspire and of which he may well be proud. Below are a few suggestions on how to earn such an honor.

*Win your position by real merit rather than by politics or favoritism.* In this age of keen athletic competition the success of the team is too important to be sacrificed to favoritism and political "pull." You have to be able to "deliver the goods" or the team cannot use you. The best way to make the team is to qualify yourself for it, even if your uncle does happen to be the richest man in town or even if your father is on the board of trustees of the school in which you are enrolled.

*Be willing to work hard and take a great deal of rough treatment.* Making the team requires the utmost effort and the utmost willingness to endure hardship and unpleasantness. Strenuous practice is needed to develop the necessary skill and to harden your physique for the crises you must face. Long hours of practice are required and these often come at times when you would like to be doing something else, but if you are going in for athletics you have to make your decision once for all and give athletics the right of way over other recreational interests whenever there is a conflict.

*Go out for practice a year or two before you hope to make the team.* Rome was not built in a day, nor is an athlete developed in a season. You have to practice, work, study, and develop. In the average school there are so many other good athletes that you have to spend a long apprenticeship before you get to be a player of the first rank.

*Study your part intellectually in addition to practicing it physically.* Concentrate your efforts on finding out every-

thing that is to be learned about your part. If you are playing tackle, guard, or shortstop, read books on how to play in these positions. When you go to another game, make a special study of the technique and behavior of players in the positions for which you are training. When you read the sport page, pay special attention to the comments on and criticisms of those who are in the position to which you aspire. If you make an outstanding success in a given position you will probably do so because you used your mind as well as your body.

*Study other parts than your own so that you become a good man for emergencies.* Learn the rules for the game as a whole and not just the rules that affect your particular part. Learn the strategy of the play so well that you can visualize what all the other players are doing and can take their places in emergencies. It is desirable to practice in other positions and be an adaptable or all-round man. In other words, know everything about your own position and a little, at least, about all the other positions.

*Subordinate yourself to the welfare of the team.* You will keep your place on the team longer if you play for the team rather than for yourself. You must sacrifice your own personal interests in order to help the team. You cannot win the game alone, however hard you try, and the harder you try to win it as a lone player the more likely you are to cause your team to lose. It is necessary to let the other man take the glory for many a play when in reality you did the hard work that gave him the chance.

*Guard against the tendency to become a public favorite or star.* Playing to the grandstand spoils many a good athlete. Over-sensitiveness to praise has caused many a good man to try to make some spectacular play which resulted

disastrously. Play where the coach puts you and feel happy about it, even though it does not give you an opportunity to shine before the multitude. Keep in mind the playing of the game rather than the winning of personal glory.

*Be loyal and cooperative, regardless of what may happen.* It is easy to be loyal when everything goes well; the real test comes when the group is facing disaster. In such trying situations the real team member smiles and cheers his fellows and works just that much harder. There is another type of person who in such circumstances tries to seek an alibi or to find some excuse upon which to blame misfortune. This kind of person "knew beforehand that the coach was wrong and ought not to have had them use such a play." He may try to cover his own shortcomings by blaming some teammate. If you wish to stay on the team and be a positive force upon it, be loyal, cheerful, and optimistic when things go wrong.

*Be dependable.* Obey the training rules implicitly. Do not fail the coach at practice time by being absent occasionally or by being tardy. Dependability, punctuality, obedience, and similar traits are fully as important in athletics as in the army. If you cannot be depended upon in those aspects of the program which may be unpleasant to you, the chances are that the coach will have his doubts about your dependability in other situations.

*Maintain yourself in good scholastic standing.* Players sometimes fail their teams in the most urgent and most critical of all the requirements for good team membership, namely, in scholastic eligibility. If you work hard and earn your position in every respect except in making your grades in the subjects which you are studying, you have simply misapplied all your energies. You also

help to bring athletics into discredit, because eligibility information is usually a matter of public knowledge, and when a good player is declared ineligible he strengthens the common notion that few athletes are good students—a notion which though not true is, nevertheless, quite current.

- Assignments:* 1. Compare skill, mental effort, and character traits as to their importance as factors in success on an athletic team.
2. Recall students who tried unsuccessfully to win a place on a team and explain why they failed.
  3. If you were going to try for the athletic team, what specific position would you try for and why do you choose that one?
  4. What do you consider the best way to prepare in high school for success on the college athletic team?

**6. How to develop sportsmanship.** We hear a great deal about how athletic activities aid in the development of sportsmanship; often the assumption is that this by-product will automatically result from athletic participation. This is not true. Almost every year we note instances in which the spectators at a big game develop into a fighting mob, or in which two players come to blows on the field. Good sportsmanship does not come automatically, but it can be developed. We shall now consider a few ways to accomplish this.

*Learn sportsmanship in many specific situations instead of merely admiring it as an abstract virtue.* Sportsmanship, like honesty, is a combination of a large number of individual acts rather than a single act. You may be a perfect sportsman in one line and a very poor one in another. Insofar as there is a general rule, probably the best is the golden rule, "Do unto others as you would have them do unto you." Unfortunately, many athletes and many fans in the grandstand who would subscribe to the general principle of the golden rule in athletics forget all about it when it comes to some specific test of

its application. Sportsmanship is learned specifically, and not in general.

*Fraternize with your opponents before and after the game.* Get a chance to meet your opponents personally; talk with them about their school or their trip to your town. It is much easier to be a good sportsman in dealing with those whom you know in this manner than it is in dealing with strangers. Similarly, intermingling after the game may help to cement bonds of friendship and goodwill between the two institutions.

*Make a point of showing courtesies to your opponents in public.* It is possible by means of very small and otherwise insignificant acts to emphasize the point that you have a high regard for your opponents. For instance, a player who picks an opponent up after a fall helps to educate the crowds in the grandstand by his example of courtesy. Two or three such examples may bring about an entire reversal of grandstand etiquette.

*Exercise self-control in the face of bad sportsmanship on the other side.* The real test of good sportsmanship comes when you face its opposite. When the other side does something altogether wrong the natural impulse is for you to do something a little worse to retaliate. Frequent giving away to such impulses caused the student fights and the mob violence which brought discredit upon athletics in the earlier days.

*Rely on the etiquette of the host or guest relationship to aid your self-control.* Most athletic contests are played either on your home field where you are host to the visiting team, or on the opponent's field where you are a guest. Whether you are a player or a spectator, therefore, you can usually be classified as a host or a guest. With a little effort you can establish the tradition that the home team will be host to the visiting team and that



the home fans will be hosts to the visiting fans. By playing the part of host or guest both sides will be able to exercise more self-control and manifest better sportsmanship.

*Avoid peevishness in defeat.* To manifest undue depression, chagrin, annoyance, or peevishness in defeat is not only a sign of poor sportsmanship, but tempts the other side to display more pride in victory at your expense. This leads to taunts and insults which would never have come if you had manifested a better disposition. One side or the other is almost certain to be defeated, and good sportsmanship calls for taking defeat in a philosophical rather than in a childish way.

*Avoid arrogance in victory.* To be a good winner is as important as to be a good loser. To be arrogant, ill-mannered, or insulting to the losers is unsportsmanlike. To be modest and gracious when you win makes it easier for the other side to be cheerful and courteous in defeat. This paves the way for a more courteous relationship in the next season, when victory may be on the other side.

*Take unfavorable decisions of the referee without making any demonstration before the spectators.* To make unkind remarks about the judges or referees either at the time of a decision or afterward is in bad taste, and is likely to suggest small-mindedness. The referee may be wrong, since referees are only human, but he does the best he can and is more likely to be right than the players who try to argue with him. It is bad sportsmanship for spectators in the grandstands to boo a referee's decision, just as it is bad taste for the players themselves to argue about it.

*Play honestly and fairly, regardless of the outcome of the game.* The most important rule of sportsmanship is that of

honesty and fair play. To take an unfair advantage of an opposing team, or to break a rule merely because the referee was not in a position to see you, may help you to win the game but it does not help to win your own self-respect nor that of the opposing team. You have to live with yourself and it may be difficult to feel proud of your athletic accomplishments if they have been due to dishonesty or foul play.

*Assignments:* 1. How much influence does the yell leader have upon standards of sportsmanship?

2. What determines the behavior of the grandstands, and how can that behavior be improved?

3. In what specific ways do the standards of sportsmanship in your school need improvement?

4. Cite notable examples of good sportsmanship which you think are especially worthy of imitation in your school.

### **7. How to get a well-rounded physical education.**

The great danger of interscholastic athletics lies in over-specialization. The fact that you are good at one particular game and one position within that game tends to encourage you to specialize and devote the better part of your energies to that one type of performance. Such a policy may result in over-development of certain muscles or organs of the body to the comparative neglect of the others. It may actually leave you worse physically than you were before. We shall give our attention at this time to some methods of preventing this narrow type of specialization.

*Participate in sports which are less highly organized than interscholastic athletics.* Many schools and colleges have a program of intramural sports involving such elements as baseball, basketball, soccer, tennis, handball, swimming, etc. Each society, group, club, fraternity, or other organization, has its team and competes with similar organizations. If you go into athletics on this basis

you play with students who are less thoroughly specialized than the members of the regular teams, and you play more kinds of games in an amateur way. You get more general training than you can get by being a member of the regular team.

*Make definite provision for activities that counteract team specialization.* If you are on the team it is well to take special thought to get into your yearly program some form of physical activity radically different from that in which you engage as a team member. If you are a javelin thrower on the track team, it is well to cultivate swimming, hiking, or wrestling, which will help to counteract the extreme specialization which comes from a great deal of javelin throwing. The same principle applies in the case of pole-vaulting, distance running, basketball playing, and other activities.

*Follow the seasonal rotation of sports.* If you play all the main seasonal games you get a fair degree of all-round training in the course of a year. The big danger, of course, is that the football player who has a strenuous season in the fall may neglect other types of sports during the winter and spring in order to catch up with his scholastic work, and thus fail to get a many-sided training.

*Test yourself and work to attain the norms for all-round bodily development.* It is possible to have yourself examined and scored by a general score card which will tell whether you are up to norm in strength, chest expansion, weight, height, posture, etc. Thus it is possible to determine exactly what your physical training needs are. Such a physical examination and testing program is very useful in paving the way for a later corrective program.

*Use gymnastics for special developmental purposes.* At a

number of places in this chapter we have mentioned the superiority of play over gymnastics, but there is one point on which gymnastics rate highly. That is in the field of corrective work designed to remedy specific bodily weaknesses, or to build up specific organs or body parts. If you resort to gymnastics for this purpose, you should do so intelligently rather than blindly. If you go through a set of formal exercises chosen at random you may really emphasize the weakness which you are trying to remedy. Sports are preferable to gymnastics for general development and are certainly preferable from the standpoint of cultivating recreational interests. But they may lack some of the possibilities of remedial development which gymnastics can supply.

- Assignments:* 1. Outline a balanced program of physical activity to suit conditions of school life.
2. In what ways would that program need to be changed when you leave school?
  3. Have yourself examined and find what you need in order to round out your physical nature more perfectly.
  4. What reasons other than those of health can you give in favor of a varied as contrasted with a limited program of physical activities?

**8. How to prevent physical activities from interfering with scholarship.** It is true that one of the seven main objectives of education is health and physical fitness. There are some in almost every school, however, who seem to forget that health is not the only objective of education. The student who spends so much time and effort in physical activities that he neglects his scholarship and gets poor grades finds himself ill-prepared for his occupation and for the other demands of adult life. The following suggestions may assist in achieving a proper balance between physical and mental activities.

*Put school work first.* Physical fitness is very important as a means of attaining mental efficiency, but does not justify sacrificing mental efficiency. Furthermore, a moderate amount of the physical activity will be enough to maintain your health and physical fitness. The rest of your time may then go toward making scholastic achievements. The physical activities are in considerable measure by-products of school life and should be recognized as such.

*Arrange a time budget or schedule.* If physical activities tend to crowd out scholarship by taking up an undue amount of time, the remedy lies in making a budget so that you devote only a certain number of hours daily or weekly to them. If you find that the time required to make the athletic team is too great to permit you to carry your school work, the proper decision would be to drop the team or to drop some of your courses, but certainly not to lower the quality of your scholastic work.

*Avoid physical exhaustion that interferes with study.* A danger that is more serious than the one just mentioned lies in the exhaustion that comes from extreme physical exertion. Physical fatigue hampers mental efficiency. There is a common notion that physical activity rests the mind, but this is far from true. A period of physical play may provide wholesome stimulation, increase the circulation, and otherwise tone up the body so that you are in better condition for study, but a strenuous program of physical exertion in which you come back to your room utterly tired out leaves you unqualified for effective mental activity. The reason is that when you are fatigued the poisons due to the breakdown of tissues are absorbed in the blood and are carried throughout the body by the blood stream. Thus they reach the

brain as well as the muscles. Resting allows these chemical wastes to be eliminated through the normal channels, but this resting process is slow and is accomplished no faster for the brain than for the muscles. Many an athlete finds himself uninterested in his school work and lacking in any special enthusiasm for study, but does not realize that the cause is over-fatigue due to too much physical exertion.

*Work while you work, and play while you play.* When you go upon the athletic field or into the gymnasium forget about your books and relax for as complete a period of physical enjoyment as possible; when you go back to your room to study put the physical activities as completely out of mind as you previously did the mental ones. The effort to mix the two reduces the value of both.

- Assignments:* 1. What facts do you have regarding the relationship between athletics and scholarship?
2. Give as many reasons as you can for insisting upon good scholarship for members of athletic teams.
  3. Recall particular cases of athletes who were disqualified because of low grades and show what caused them to become ineligible.
  4. What is a suitable time budget for an athlete in your school?

**9. How to learn rhythmic or musical physical activities.** Numbers of physical education courses include marching, skipping, folk dancing, and other rhythmic activities. Let us now consider some principles that apply to the learning of these.

*Give grace and beauty of movement a place in your program of physical development.* Some students feel self-conscious and unnatural in the early stages of learning rhythmic activities because they have not learned the importance of beauty and grace as physical assets. The Greek idea of symmetry and proportion of body com-



bined with harmony and grace of movement has much merit and deserves to be recognized more today. Strength and power have their values but should be supplemented by grace and beauty. This fact should warrant a sympathetic and earnest effort to learn such rhythmic activities as are taught in your particular school.

*Practice.* To become a skillful dancer calls for practice just as truly as does the effort to become a skillful musician or football player. The process is one of habit formation, and you cannot form the necessary coordinations without a great deal of repetition. You cannot be a good dancer by watching other people dance, nor by studying the kinds of steps. These are necessary but they have to be supplemented by practice.

*Study music.* A person who has studied music is able to follow the rhythm better and to react to it more naturally than if he had not studied it. It would be inappropriate to study music solely as an aid to rhythmic physical activities, if the study had no other values, but since music is worth studying on its own merits and also yields this by-product, you accomplish two things at once when you study it.

*Relax.* Rigidity is one of the greatest difficulties in dancing, just as it is in swimming. There is a tendency to use a great deal more muscular effort than is required and to tighten your muscles so that some pull against others and thus cramp or lock the whole muscular system. If you relax, you have a great deal more chance to execute the movements gracefully.

*Learn in the company of others.* There is much more interest in learning a dance when several others are learning it with you than when you try to work alone. The whole psychology of dancing is social rather than indi-

vidual. Much of its satisfaction comes from your being in harmony with others who are engaged in the same activity as you are. When you learn with a class, therefore, you can enter into the dancing in the spirit of fun and enjoyment, as you would at a social party; whereas, if you work alone there is little interest or stimulus.

*Practice with a more skillful partner.* The advantage of practicing and learning along with a more skillful partner is that the movements and reactions of your partner will have a subconscious effect in guiding your own movements. You may not even realize that you are being aided. Dancing is like singing in this respect. If you are learning a new hymn at church, the fact that the rest of the congregation is singing helps you to pick up the tune and to keep you on it. Consequently, you learn quickly, when it would be difficult for you to learn the same tune at home. Two beginners in a dance may have a great deal of trouble in making progress when dancing with each other but will catch the swing of the music and master the necessary physical coordinations quickly if dancing with skillful partners.

*Have a very pronounced rhythm to guide you in the early stages.* The beginner needs a more emphatic rhythm than the experienced person will ordinarily care to have. It is often well to ask the musicians to exaggerate the beat and minimize the melody until you become able to follow the rhythm. Afterward the rhythm may be put more in the background and the melody given more attention. A dancing class sometimes gets a splendid musician to play for it and yet has difficulty following him because he plays beautiful rather than practical music. In other words, he emphasizes the music for its melody or theme rather than for its rhythm or beat.

*Study the activity in an intellectual way.* If you are learn-

ing a new step you have much room for genuine mental study, and considerable need for mental concentration while you are practicing. You may analyze the dance as a whole into its units and mark these off by counting, in order to keep time and gain coordination. The problem of developing a satisfactory motor memory pattern and keeping this in mind while practicing so that you are always conscious of what you are trying to do calls for no small amount of mental concentration. Incidentally, social conversation on the part of beginners learning new steps frequently takes their minds off the dancing to such an extent that learning is almost completely stopped.

*Study the history or meaning of the folk dances which you are learning.* As a rule a folk dance is a representation of something in the life, history, or background of the race or people who created it. It is, therefore, an interpretation rather than an end in itself. Naturally, it is difficult for you to succeed perfectly in interpreting the dance if you do not know what you are trying to interpret. A given movement, for example, may originally have been the act of sowing or scattering seed as the farmer plants his field, but in the dance as it has come down through ages this has become conventionalized and hardly recognizable at first glance. If you study the historical significance of the various parts you can do the whole more perfectly.

- Assignments:* 1. How do the rhythmic physical activities compare in value with others?
2. Explain how rhythm or music contributes to the enjoyment of a physical activity.
  3. Criticize the statement that dancing develops grace and poise.
  4. What were your principal difficulties in learning to dance?

## 10. How to benefit from calisthenics or formal gym-

**nastics.** A prominent portion of the physical education activity in many schools is gymnastic rather than athletic, and consists of work with dumb-bells, Indian clubs, punching bags, parallel bars, and other apparatus. As a general rule, these activities occupy a less prominent place in the program now than they did some years ago, and the tendency has been away from them and toward a greater emphasis on games and sports. There are many values in this type of work, however, when it is properly used and when it is carried on in the proper spirit. For this reason we shall consider some ways to get the maximum benefit from such activities.

*Use gymnastics as a substitute for sports in cases of necessity.* There are times when it may be very difficult for you to indulge in sports on account of the limitations of time, space, or climate; you may have to choose between gymnastics or no physical activity at all. The army gave considerable emphasis to gymnastics because it would have been impossible to organize an adequate program of games and sports to include so many men, and because the morning setting-up exercises could be relied upon to give a maximum of physical toning up in a minimum of time with a minimum of effort and cost. The same situation is found in many schools and colleges, in which, because of numbers and limited equipment, gymnastics must occupy a prominent place in the physical education program. Also in the daily life of some persons outside of school gymnastics offer about the only opportunity for any systematic program of exercise.

*Use them for special corrective purposes.* In addition to emergency situations such as were mentioned above, formal gymnastics are valuable for the correction of specific physical weaknesses and defects. Persons with

posture defects need to have special types of gymnastics to develop correct posture. As was mentioned at an earlier point, however, corrective work is quite different from blind or unguided exercise. You may increase instead of decrease a fault unless the exercises are prescribed by a physician on the basis of an examination and properly adjusted to your particular needs.

*Exercise regularly.* Haphazard gymnastics cannot be expected to accomplish a great deal of good. Furthermore, if you are not regular you are likely to neglect your exercises for longer and longer periods until finally you discover that you are not doing them at all. The interest problem in the formal type of activity is always serious, and if you are not careful you will discover yourself putting off your exercises much of the time. If you form a regular habit, however, by arranging a definite time in the day for exercise, you are more or less automatically reminded. You eliminate the necessity of making a choice as to whether you will do your exercises, and will do them from habit.

*Schedule them wisely.* You should take your exercises at the time of day which is most appropriate in your own particular case. This will vary with different individuals according to the purpose for which the exercises are being done. One person's needs may be such as to make the period before breakfast very desirable in order to get the body in proper condition for the early meal and prepare the alimentary canal for normal functioning. Persons who are underweight need to exercise at the time of day which will give maximum improvement to the appetite and thus aid in gaining weight. Persons who are overweight should arrange an exercise program that will not build up a ravenous appetite just before meal time. The question of length of practice

period also enters into the problem of making the schedule.

*Do them vigorously and wholeheartedly.* Most gymnastic exercises lose their value when they are done in a desultory fashion. Half-heartedly or listlessly going through the motions of otherwise valuable exercises may become such a bore that you will really be worse than you were before.

*Avoid strenuous exercises which produce bodily discomfort and extreme fatigue.* It is possible to make every muscle in your body ache as a result of a fifteen-minute period of exercise if you go into it vigorously enough, but the values of such methods are very doubtful. The exercises which make you most uncomfortable are likely to be those which are relatively unnatural to you or which you seldom do anywhere except in a gymnasium. If these are given such an extreme emphasis that regularly they leave you physically uncomfortable, their value is questionable.

*Make the movements rhythmical so that you enjoy them more.* Much of the interest problem can be solved by introducing the element of rhythm. Any act which is done rhythmically is likely to be more enjoyable than the same act done in a non-rhythmic fashion. Some gymnasiums make use of phonograph or radio music to add interest to the work. Another common practice is to have a leader count time or make rhythmic signals to add zest and interest to the work.

*Assignments:* 1. Contrast athletics and gymnastics in every way you can.

2. What benefit have you derived from gymnastics?
3. What kinds of gymnastics do you think that you personally need most?
4. List all situations you can in which students would profit from gymnastics more than from athletics.



5. What can you do to get the most good out of gymnastics when for any reason they are required of you?

### **11. How to develop and maintain good health habits.**

The art of keeping healthy can be learned. There is no great mystery about it. The major requirements are common sense and good judgment. Below are a few elementary rules that may be of service in promoting health.

*Learn the science that is basic to health.* Unfortunately, there is still a great deal of superstition abroad in connection with matters of health. Many of these beliefs are held by persons who are otherwise well trained and well informed. The study of such sciences as biology and chemistry will help you to qualify for clear thinking and the intelligent solution of health problems.

*Invest in prevention instead of cure.* The best time to improve your health is before you get sick. A few dollars spent for physical examinations and for remedial treatment of disorders before they become serious may save many dollars and a great deal of discomfort and inefficiency later.

*Guard against sources of infection.* One of the most common causes of ill health is disease germs or bacteria. These are spread from person to person according to well known laws, and their spread may be controlled by practicing the science of sanitation. A physician can attend a patient who has a contagious disease and yet not catch the disease, because he knows how to guard against infection. A little study of the science of bacteriology will go a long way toward preventing diseases.

*Build up high resistance to disease.* There are so many millions and billions of germs on your hands, in your food, and in your nose or throat, that you would die in a very short time if you did not have a bodily mechanism

of sufficient strength to resist them. For example, the average person has germs of tuberculosis in his body all the time, but they are helpless if his power of resistance is high. A large reserve of physical energy is the most powerful defender of your health.

*Conserve your bodily energy.* The law of economy in the expenditure of physical energy is particularly important in the case of persons whose health is in danger. If you are in low physical condition, get plenty of sleep. Take a nap during the middle of the day. Avoid being up late at night. Avoid strenuous exercise which fatigues you unduly. The principle is the same here as in building up a good bank account. If your account is low, put in more money and avoid checking out what is there. Similarly, in bodily economy make the income higher than the expenditure.

*Avoid excess.* Carrying activities to extremes is a common cause of ill health. Food tastes good when it is eaten, but this does not warrant being a glutton or eating to excess. Similarly, physical exercise is good, but is not to be overdone. Rest and relaxation are desirable but should not be carried to the point of excluding all physical exercise. The law of proportion, balance, or symmetry in the affairs of your daily life is an important rule of health.

*Lead a clean moral life.* Keeping healthy is in large measure a matter of clean living. Many forms of behavior which are rated as immoral are in that category because of their injurious effects on health. The highest type of bodily health is impossible unless you maintain the highest standards of moral life.

*Assignments:* 1. To what causes do you attribute such good health as you have?

2. If you are not as healthy as you wish, to what reasons do you ascribe your lack?
3. Prepare a score card by which any student may check his health practices, listing the items to which he should give his attention.
4. Compare the importance of knowledge, motive, and habit as factors in health.

**12. How to learn the facts, principles, or science basic to health.** The whole problem of health education may be broken up into three divisions, health interest, health information, and health habits. This section is devoted to the informational aspect of the health situation and is intended to help in the acquisition of useful health knowledge.

*Take courses in biology, bacteriology, and physiology.* The basic subjects which underlie health are the biological sciences. We have already devoted a chapter to how to study biology and need only mention here the fact that the main problem in connection with health is to make your biology function. Try to discover the application of its principles to particular health situations.

*Subscribe to "Hygeia" and similar popular but reliable health journals.* *Hygeia* is published by the American Medical Association and probably heads the entire list of health journals from the standpoint of scientific merit and reliability. At the same time, it is written in simple language and employs a non-technical terminology in the range of the average person of ordinary education. Innumerable other journals attempt to serve somewhat the same purpose, ranging all the way from the highly technical to the very simple. At the same time they vary all the way from the perfectly scientific and dependable to the utterly false and even the dishonest.

*Buy a good general health manual to consult when special problems arise.* In addition to your regular reading for educational purposes, of such journals as *Hygeia* you need

also a reference book on health. Go to it in emergencies or in connection with minor health problems that are not sufficiently serious to warrant calling a physician. The old family "doctor book" is not exactly what is intended here. As a rule it consisted of mere recipes, telling what to do or what home remedy to apply under this, that, or the other combination of symptoms, but did not give a sufficient scientific or rational explanation of the principles on which these treatments were based. What we have in mind is a thoroughly scientific and reasonably complete book on physiology and health which is arranged in a form for easy reference.

*Work back from concrete situations or problems to their theoretical background.* In the foregoing paragraph was a suggestion on the importance of working from the practical to the theoretical instead of from the theoretical to the practical. Your health knowledge is more likely to apply, and more likely to be a vital factor in your actual daily living, when you acquire it as a means of solving your urgent problems rather than when you learn it without any immediate need. It is not necessary to wait until you are sick to study about an illness, but if you take a particular type of illness which is rather common and see its causes, remedies, and the principles underlying its remedies, you study the theory of health in a practical and functioning way.

*Beware of health faddists and quack healers.* Health is such an important problem, and illness is so common in the world, that a large number of healers innocently or dishonestly prey upon the misfortunes of others by offering health service that is unscientific and positively harmful. Many of these health faddists are perfectly honest and are actuated by the highest of motives; they are simply untrained, misinformed, or under the influ-

ence of emotional factors which interfere with clear thinking about the procedures which they recommend. In the field of health, as elsewhere, it pays to patronize the expert and to beware of the quack.

*Beware of advertising matter that is distributed under the guise of health information.* A large number of patent medicines are on the market, and many cure-alls are being advocated for this, that, and the other disease. It is necessary to read with utmost caution any pamphlet, article, or book about health, always being alert to notice what the motive back of it is. The fact that something is advertised does not necessarily condemn it, but it does raise a question or doubt, and calls for careful investigation. This is particularly true in the light of the fact that according to the ethics of the medical profession reputable physicians do not advertise.

*Go to trained experts when you are ill instead of trying to be your own doctor.* What has been said in connection with educating yourself about health problems should not be mistaken as a recommendation for you to be your own physician instead of calling on one who is scientifically trained. You would not attempt to repair your own watch, nor to fight your own case in court, nor to perform an operation upon a member of your family. Yet numbers of persons will try to save a few dollars by applying some home remedy or possibly a series of them until the case becomes so serious that the ultimate cost of medical services is far greater than it would have been at first. Health education never replaces the health expert; it should prepare for a more intelligent cooperation between the patient and the physician when expert services are required.

*Assignments:* 1. From what sources did you get the health knowledge which you now possess?

2. What subjects in the curriculum are richest in their contribution to health knowledge?
3. What types of health knowledge does the public in general most seriously need?
4. Bring to class a misleading patent medicine advertisement and point out the kinds of information which a reader would need in order to discover the fallacy in it.
5. Explain why some students do not get interested in courses which specialize in imparting health knowledge.

**13. How to practice mental hygiene.** We are told that nervous and mental diseases are increasing. Great strides have been made in the science of prevention and cure of physical ailments, but less attention has been devoted to mental health and mental hygiene. Suggestions on how to achieve mental health are therefore in order.

*Keep physically fit.* A most important rule of mental health is physical health. Many a person who has spells of "blues," melancholy, or temptations to commit suicide would be completely cured of these mental ills if his physical difficulties were removed. Bodily discomfort lowers the general tone of the nervous system and brings on mental complications which are not readily associated with their physical causes.

*Keep your mind off yourself.* Introspection or self-analysis can make mountains out of mole hills and produce a great deal of unnecessary unhappiness. An important rule of mental health is to turn your mind outward or to develop the objective rather than the subjective or self-conscious personality.

*Keep busy.* One of the best ways to accomplish the goal that was just mentioned is to keep so busy at something useful that you have no time to worry about your troubles nor to brood over your shortcomings, imperfections, and misfortunes. This point has been well expressed in



a little motto which the writer has been unable to trace to its source. It reads as follows:

Look up, not down,  
Look out, not in,  
Look forward, not back,  
And lend a hand.

*Have a goal or major objective in life.* Aimlessness and unhappiness go hand in hand. If you want to be happy and have a normal mental life, pick out the goal toward which you are going to strive and do your utmost to reach it. If you have no definite interest in life, no major dominating purpose which colors your whole system of reaction, you lack an organizing principle, and your personality will probably be torn by many conflicting impulses. You will be in a state of confusion because you try to go in every direction at once and really go nowhere in particular.

*Arrange your daily habits in an orderly routine.* System and order are great servants of mental health. If you have to meet each of your crises or problems as if it were a special case, you use up a great deal of unnecessary nervous energy. If, on the other hand, you mechanize or routinize a large portion of your day's work, you are much happier. For purposes of illustration, consider the question of sleeping in the same bed every night, or going to bed at the same time every night. The average person will go to sleep more promptly and sleep more soundly if he retires at the same time and in the same place than if he retires at all times from eight o'clock to one o'clock, or if he sleeps in hotel rooms where conditions are different every night.

*Give yourself an opportunity for wholesome self-expression.* Every person needs an outlet, or a chance to get some

kind of diversion. If you deny this demand of human nature by living in a too completely routinized fashion, you may develop abnormal tendencies. A little romance, a little adventure, a little beauty, a little sociability, must come into every life. Recreation is just as essential to mental health as it is to physical health. Take opportunity to get your mind off your responsibilities and devote it to affairs of a different type occasionally. Read good literature; belong to clubs and social organizations; take part in religious activities; patronize the fine arts and other wholesome leisure activities.

*Devote your attention to the brighter side of life rather than to its unpleasant phases.* Cultivate the cheerful, alert, optimistic, constructive attitude, rather than the fault-finding, grumbling, complaining, self-pitying, or grouchy one. Rejoice in another person's achievements and avoid being jealous because he has accomplished more than you. Give others credit for good motives and sincerity of action even if they do not do what you would have done under similar circumstances. When affairs do not go exactly as you would have them, just smile and say, "It's a fine old world," and make the best of it.

*Pick friends and associates who have the personal qualities you wish to develop.* Your outlook on life, your mental attitude, your reactions to others, and your personality in general, reflect the personalities of those with whom you associate. It is well to avoid regular contact with those who have low moral ideals, because unless you are careful you will adopt a great many of those attitudes yourself. Daily association with those who are dissatisfied and rebellious toward society will almost certainly make you discontented and unhappy. It is believed that numbers of cases of insanity have been induced by persons living in psychopathic homes.

*Lead a clean moral life so that you have nothing to regret.*

Morality and mental health are closely associated. A prominent school of psychologists holds that one of the chief causes underlying mental ill health is repression, or the effort to cover up something which one does not wish to let the rest of the world know. A clean life which contains nothing to cover up is much more likely to be a happy, wholesome, and healthy life.

*Be clean in your thoughts as well as in your actions.* What was just said about morality applies to your thought life as well as to your overt behavior. Make a rule never to think anything you would be ashamed to speak, and never to speak anything which you would be ashamed to do. Thus you will have laid a solid foundation for mental health.

*Go to a psychiatrist for necessary treatment of nervous and mental disorders.* When you really have a mental illness or a nervous maladjustment of any kind, the best thing to do is to go to a specialist who has made a definite study of the causes and treatment of nervous diseases. The psychiatrist is a type of physician who is trained from the standpoint of ordinary medicine and also from the standpoint of psychology. He has methods of diagnosis and treatment which enable him to get to the seat of your trouble and to uproot the disturbing elements. There are, of course, numbers of dishonest or misguided individuals who will offer you perfect happiness and relief from all your worries for a sum of money, just as there are those who will take advantage of your physical ailments. But if you take the trouble to investigate or if you get the recommendation of your family physician, you should have no difficulty in finding someone who is competent to treat your mental disorders and to restore you to peace, harmony, and happiness.

- Assignments:* 1. Recall a time when you had the "blues" and see if you can explain the reason.
2. Criticize the statement that the mind can get sick just as truly as the body can.
  3. Contrast the daily life and habits of two persons, one of whom is very obviously happy and the other unhappy, and see what causes you can observe that might explain differences in happiness.
  4. What physician or psychiatrist in your community is especially well prepared to treat patients who are suffering from mental or nervous difficulties?

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## CHAPTER XI

### THE FINE ARTS

*"If eyes were made for seeing  
Then beauty is its own excuse for being."*

RALPH WALDO EMERSON.

The time has passed when the fine arts were considered the exclusive property of a privileged and super-talented few. They are now recognized as belonging in the education of every person regardless of talent. The kind of art study which is appropriate to the very gifted or talented may differ widely from that which should be undertaken by a student of lesser artistic endowment, but there is something available for each and all. In the present chapter we shall point out some of these possibilities.

**1. How to select the field for your artistic interests and activities.** The first question you face when you begin the study of the fine arts is what kind of artistic pursuit to take up. In many ways the problem is similar to that involved in choosing a vocation, because the art you select will probably engage your attention all your life. Some of the factors governing this choice are mentioned in this section.

*Read about the arts and artists in order to learn what the different fields have to offer.* Get all possible information as a basis for comparing the different arts. Acquire as many experiences and get as many exposures as you can to assist in making your choice. When you have several arts from which to choose, the first and most

important step is to know what they are like, or what they have to offer. After you get this necessary information and exposure, you are much more likely to make a wise selection.

*Try out several different fine arts before concentrating on one.* A policy of sampling or exploration is very desirable in the beginning while you are making your first artistic contacts. When you have a little music, a little painting, a little modeling, and a little dramatics, you know whether you are sufficiently interested and gifted to follow any one of these in a more serious way.

*Let personal interest be an important item in your selection.* In the field of fine arts more than in any other phase of education, your personal likes and dislikes should have freedom to operate. The spirit of the arts should be the spirit of play or recreation rather than that of work or serious purpose. Strenuous effort is required in art just as in earning a living, but it is effort coupled with keen interest. For this reason your choice between the different arts should take into account your interests in them, in order that your heart may be in your work.

*Get an accurate measure of your talent.* It is no longer necessary to judge the extent of artistic talent in a hit or miss way, because there are special measuring devices for this purpose. In the field of music there is the Seashore test which will tell you to what extent you have the native endowment for pitch discrimination, memory of tone patterns, etc. In the field of the graphic arts there is the Meier-Seashore test which measures some of the corresponding elements of talent which are important in connection with visual arts. If you are undecided as to whether you will take up music or painting, it would be well to have yourself tested by means



of such tests; if other things are equal you should commit yourself to the branch in which you have the greatest talent.

*If you are low in artistic talent, stress appreciation rather than production.* Even though you may not be sufficiently gifted to be a good creative artist, there is no reason why you should not be an intelligent and appreciative consumer of the creations of others. In this day of radios, public concerts, art galleries, and emphasis on industrial and domestic art, it is possible to live constantly in the realm of beauty even though you are not able to create it yourself. You may not be able to paint a picture but you can learn enough about pictures to select a beautiful one with which to decorate the walls of your room. You may not be able to play a piece of music but there is no reason why you should not learn to like the best music and to exercise discrimination in the programs which you hear.

*Be guided by the local facilities that are available in the several lines.* In some communities the opportunities for your artistic development in one line are much greater than those offered in another. In one school you may have a well developed department of visual art but only average facilities in the field of music, or *vice versa*. If other factors are about equal you should give weight to the difference in opportunities available in the different lines.

*Assignments:* 1. Compare music and art as to which offers the greatest advantages.

2. In which of the various phases of the arts does your community offer the best facilities for training and development?

3. If you have already become interested in one of the fine arts tell how your interest originated and tell whether you think you would change your choice if you had it to do over.

4. If you have taken a test for any kind of artistic talent, describe to the class the method by which it was administered.

**2. How to finance your artistic education.** As a general rule, training in the fine arts is more expensive than training in the usual academic subjects. The tendency in many places is to think of these as being extra or different, and therefore as requiring special instruction, special tuition, and extra expense. To a considerable extent this evaluation is wrong, but it exists just the same, and it makes the problem of financing a fine-arts education a serious one. Some methods of doing it are given in the following paragraphs.

*Learn a practical art in order to earn money for fine-art instruction.* One of the best ways to provide money for the fine arts is to become a master of a prosaic bread-and-butter type of calling. Many a girl has earned her musical education by working as a stenographer; many a struggling painter has kept the wolf from the door by working at something for which the world was more willing to pay than for his amateur paintings. This principle holds true for the average persons throughout life, and may be stated as follows: First be sure that you can earn a living and then you will be able to afford the fine arts.

*Keep the arts within your regular program so that you have time for extra work to earn money.* A common tendency among students is to think of art as something extra that should be carried in addition to a full load of regular school subjects. As a result of this attitude many overburden themselves by excess work and are not able to do part-time work to earn expenses. Arts should be treated as other school subjects, and be counted in the regular school work load.

*Divert money from ordinary recreations to artistic recreations.* Most persons spend quite a bit of money for one recreation or another. They do this because they feel

rightly that leisure enjoyment is an essential to normal living. Inasmuch as the fine arts offer the highest type of leisure activity, they deserve much of the expenditure which ordinarily goes into commercialized recreations. The average person could finance his artistic education on the money he spends for inartistic recreations that really give less satisfaction.

*Make your early investment pay for your more advanced training.* In many of the fine arts the first steps may be classed as a productive investment because after you reach a reasonable degree of skill you can make that skill pay for advanced training. Many a music student has finished his education by playing an instrument at dances, theaters, churches, or elsewhere.

*Put your art to use in commercial or practical situations.* The writer knows a girl who paid her way through college drawing place cards, lettering price tags and making advertising posters for business establishments. She capitalized upon the artistic training which she had received. She made her elementary training in art bear the burden of further training in art as well as in the more general field of academic education. The business world needs beauty and is willing to pay for it. A person who has artistic training and has a practical disposition can sell his services to finance his training.

*Earn free musical instruction by serving in musical organizations.* In many communities the only opportunity to get free training in musical production consists in enrolling in the orchestra, the band, the church choir, or a similar organization. Oftentimes the members of such organizations get splendid training from a very competent leader at no expense to themselves.

*Teach beginners the steps which you have already learned.* Thousands of students of art and music pay their ex-

penses for advanced study by giving lessons to beginners. After you have made a reasonable start, turn some of your attention to the learning problems involved in the art. Take the trouble to cultivate skill in teaching the elementary steps to beginners. You may soon gain a fair income by giving private lessons to other students.

*Distinguish yourself and thereby earn a scholarship for further study.* Numbers of opportunities are available for persons of talent and diligence to do advanced study as holders of free scholarships. These are provided by institutions or individuals who are interested in the promotion of the fine arts. While these scholarships are few in proportion to the total number of students in school, they are numerous enough to be taken into serious consideration, and are important enough to justify your trying to win one.

- Assignments:* 1. Why do you consider the fine arts worth enough to justify their extra cost?
2. How much do you estimate that it would cost you to get ready for a career in the field of music or art?
  3. What do the biographies of great musicians and artists suggest about methods of financing your own training?
  4. Report special ways of financing an artistic education which you have observed or about which you have heard.

**3. How to learn the first steps in the production of an art.** There is an old adage that "Well begun is half done." This is particularly true in the production of the fine arts. Following are a few principles to guide in the early stages of learning artistic performance.

*Apply the general laws of habit formation.* To a considerable extent learning to produce a work of art is a process of habit formation. It is necessary to do a great deal of practicing in order to attain the desired skill. This practice is subject to the laws of habit formation,

which have been discussed at various places in this book. They include such points as getting a right start, having a clear idea of what you are trying to do, having an interest or will to learn, giving concentrated attention during practice, spacing the practice periods, permitting no exceptions, practicing by the whole method rather than by the part method, employing good form or posture, etc.\*

*Pay more if necessary in order to get a competent teacher.* There is a common error to the effect that when you are just beginning your study you can afford to economize by having an inexpensive teacher, even if he is not very well trained. This error is responsible for many of the failures to get results in the study of music and art. Having a poor teacher when you are making your first adjustments necessitates your spending the rest of your career unlearning what you should never have learned in the first place. A good teacher is as important in the beginning as in the more advanced phases of the work.

*Do not spend much time on formal exercises.* It is preferable to start from the first by singing actual songs, playing definite musical pieces, and drawing or painting actual pictures, instead of running scales, doing fingering exercises, or practicing making formal squares, circles, and lines. This is another way of stating the principle of learning by the whole method. When you learn to play a few pieces you have more interest and enjoyment. Also the various technical processes knit together into the whole so that you make more rapid progress than you do when you study by the formal exercise approach.

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\*For further discussion of these points see C. C. Crawford: *The Technique of Study*. Chapter V, "Acquiring Skill."

*Master the essentials of theory or technical information.* Before you can become highly skillful in the production phase of an art, there is much to learn of science, theory, and technical detail. If you are not willing to make this study you will not progress very far. One caution that should be given, however, is that you should make this study of theory a servant of your practice rather than an end in itself. You should not devote so much study to the technical theory that you lose interest in the performance or have no time for the practice.

- Assignments:* 1. Recall your own first steps in the production of one of the fine arts and point out any ways in which sound principles were violated.
2. In the light of those experiences give such suggestions as you can that would help another beginner.
  3. In your own community what would be the best procedure by which to begin taking lessons?

**4. How to derive maximum benefit and pleasure from amateur art.** It is not necessary for you to be a highly trained artist in order to enjoy and profit from your art. You should be able to put it to use while you are a beginner and before you can do very well. The following are some methods of doing this.

*Indulge in art as a private pastime.* Many a young person whiles away his idle and tedious hours by playing an instrument, drawing a picture, doing fancy work, or indulging in other artistic recreations. How much better this is than playing solitaire to kill time! Art used for this purpose is simply a form of play, or a type of relaxation.

*Forget your troubles by retreating into your artistic activities.* A good way to get over a spell of temper is to pound it out on the piano. That person is most fortunate who has a good retreat in some artistic activity which enables him to withdraw from the unpleasant situations



that come up from time to time. Spells of the blues and morbid tendencies to brood over unpleasant incidents can be eliminated to a very large extent by resorting to the arts.

*Join an organization which fosters the arts.* A splendid type of recreation is that which combines sociability with artistic self-expression, as in art clubs, music clubs and dramatic clubs. It is quite common for adults, particularly women who have considerable leisure time, to organize such arts and crafts clubs. They spend their time making fancy lamp shades, sofa pillows, baskets, pottery, and other artistic objects. Musical organizations are also extremely common and serve the same purpose.

*Make artistic creations of your own.* Try a little original composition or creation. Compose a song, set it to music, and play it on your own musical instrument. Paint a number of scenes from nature and use the best in decorating your room. Much satisfaction is to be derived from creating or producing something. To be a producer is as instinctive as for birds to build nests, beavers to build dams, or bees to construct the honey comb. Every human being is endowed with a productive or constructive instinct which is capable of giving satisfaction if turned loose in practical or artistic channels.

*Enter contests and exhibitions.* There is good opportunity for you to get enjoyment out of your art if you use it as an avenue through which to distinguish yourself. If there is to be a display of posters, pictures, pottery, weaving, fancy dancing, dramatic ability, or other artistic products, strive for such recognition as you may be able to win. Participation in a contest is usually a source of considerable enjoyment, and winning is particularly so.

*Perform in public.* Both from the standpoint of pleasure and profit you are amply repaid for participating in public programs where you put your talents to use. This is one of the finest possible stimuli to practice and self-improvement.

*Make others happy by means of your artistic efforts.* A splendid way to be happy yourself is to help others to be happy. If you can play or sing you have a good opportunity to serve and entertain your friends. If you go to a party and help out when called upon, you become a source of enjoyment to the guests and the host and will be in demand for other parties. Serve gladly and do not have to be coaxed and begged to give a number or two. In other phases of arts besides music, you have equal opportunities to make others happy. Examples are the making of souvenirs, ornaments, Christmas gifts, greeting cards, and similar artistic productions for your friends. A person who has artistic training but little money can endear himself to the hearts of his friends at Christmas time by giving presents which he has made and which are often more highly prized by those who receive them than are more expensive presents.

- § *Assignments:* 1. Compare the values of the professional objective and the amateur objective in the fine arts.
2. Would you say that there is more or less recreational value in piano playing now than there was ten years ago?
  3. In how many different ways can you use training in music to increase personal enjoyment?
  4. Do you get more enjoyment out of production or consumption of the fine arts? Explain.

**5. How to become a successful creative or professional artist.** We have just considered the problem of how to succeed on the amateur level, and are now ready to think about methods of attaining success on a wider scale.

*Aim high.* You seldom succeed except as you plan. It costs no more to think in big terms than in little terms, and the chances of outstanding ultimate success are increased if you prefer to dream of big things rather than of petty ones.

*Train yourself thoroughly.* If you expect to be an artist of a high type, there is no substitute for a good teacher and good training. Select a teacher or school of the highest type rather than one offering inferior services at cut rates. Invest in the very best that the market affords.

*Practice faithfully and regularly.* The road to outstanding success in the realm of art is paved with diligent labor. It is said that outstanding performers of world-wide fame literally spend hours every day in practice merely to keep up the skill which they have already acquired. How much more necessary is it for one who is first trying to reach those heights to practice diligently and persistently!

*Study the lives of those who have succeeded in a high degree.* Read the biographies of great artists in the field in which you expect to compete. Study them as historical examples for the lessons they have to offer you, and try to see what won them distinction and paved the way to their successes. See also what mistakes they made and try to avoid those errors in your own climb to success.

*Attend art exhibitions and musical concerts where your future competitors are represented.* Visit the places where the best art is on display. Study it as a model with which to compete and to excel. Make the acquaintance of the leaders in the field to which you aspire. Learn what you can of their methods and policies so that you can eventually do as well as they. If you know what kind of goods

your competitors are turning out you are better qualified to meet their competition.

*Begin marketing your productions early.* If you expect to win a reputation as a producer do not wait until you have perfected your talent before you display it for the public. After you have attained a fair degree of excellency, seek some kind of market for your product and thus get the reactions of those who are going to judge your later works. Enter your creations in exhibits, prize contests, and public programs and thereby learn how to compete on a higher level.

*Offer your services free of charge or for a small price at first in order to gain recognition.* Every artist has to build up his audience or his public following and must be willing to offer his services at first for little or nothing in order to get the recognition he seeks. If you sell your art cheaply at first, you create a demand for it. As you develop greater skill, however, and win a correspondingly greater following, you should begin to evaluate your productions more highly and to ask a fair price for them. In other words, you have to offer free samples in the early stages for purposes of advertising, but should not keep it up indefinitely.

*Be a good business manager as well as a good artist.* The reason poets and artists traditionally starve to death while they are struggling to attain fame and recognition is in part poor business management. They do not starve because of extravagance or lack of thrift so much as because of failure to consider the methods of selling their artistic products. The artist is by nature emotional and is more interested in his art than he is in the selling of it. He often limits his success because of his poor methods of marketing what he has to offer. It is necessary to study the pulse of the buying public and to

produce something that conforms to public taste if you wish it to be purchased extensively. So great is the need of good business management in the field of the arts that the profession of press agent or business manager for artists has grown to large proportions. Unfortunately, numbers of incompetent or dishonest persons offer themselves as business managers and victimize the artists who trust themselves to their guidance. The existence of such persons, however, should not cause you to discredit the advice to seek competent business management if you are not able to market your own creations.

*Be yourself and do not slavishly imitate others.* There are two types of artists who gain fairly wide recognition. One type sets a pattern; the other type tries to imitate it. The former type accomplishes the biggest things. The world is willing to pay a high price for something new. It is willing to reward originality. It wants you to let your imagination function and wants you to be yourself. Many an outstanding novelist, musical composer, and painter has climbed to a position of prominence before the public eye not so much because of the real quality of what he produced as because of its being different or unique.

- Assignments:* 1. Recall famous musicians or artists whom you have seen and report what you consider their distinguishing characteristics.
2. Interview someone who has made a success in one of the arts and report his explanation of how he managed to succeed.
  3. From your reading in the history of music and art what suggestions can you offer that would help another to become great in a similar degree?
  4. Outline what you think should be the training of a prospective artist from childhood through to fame.

**6. How to study the technical or theoretical aspects of an art.** There is a scientific, theoretical, or technical

phase of almost every human activity. This is particularly true of the arts. In connection with music, for example, there is the whole field of physics of sound, to say nothing of the technical matters associated with such words as clef, key, signature, eighth-note, sharps, flats, and so on. The following principles may be of service in studying such theoretical and technical points.

*Minimize theory in the early stages of your training.* When you are taking your first course in a given art it is more important to learn the practical than the theoretical aspects. If you have a very short time to devote to learning to sing it is better to spend that time singing by rote instead of spending it on learning to read music. If you do the latter you may have no time left in which to develop skill in singing. The same principle applies throughout all the fine arts and may be summarized under the rule of letting theory wait if there is a choice between theory and practice.

*Avoid overemphasis on the technical aspects at the expense of appreciation.* It is more valuable to enjoy music than to understand it in a scientific way. It is entirely possible to kill your appreciation of music by making it simply a natural science or a technical study rather than a leisure activity.

*Study the theory as a servant rather than as an end in itself.* The theory of a fine art is comparable to the theory of the English language in that it should be used as an aid to better practice rather than as an attainment or accomplishment for its own sake. You get no gain from the study of English grammar except as it helps you to speak and write the language better. The same is true of the technical science underlying the fine arts. The lack of interest in the fine arts on the part of many students is due to their having been exposed to courses in



which the theory was too prominent and its relation to practice not clear.

*Study theory as the need for it grows out of practice.* The surest way to guarantee the application of theory to practice is by studying the theory when the need for it arises. If you try to play a piece and confront a technical difficulty, that is the time to stop and study for the solution of that difficulty. When theory is studied in this way you have a real motive for it and a different attitude toward it.

*Take definite courses in theory as a part of your advanced study.* What was said in the early paragraphs of this section may have appeared to be unfavorable to the study of the technical aspects of the fine arts, but what was really meant was that the elementary stages should be left free from an undue burden of technicality. If you ever expect to go to the top in the fine arts you will have to devote a great deal of study to theory. You can never go very far in music without studying harmony, and you cannot go very far in art without getting down to a study of the basic art principles. You may prefer to practice your art on the more superficial basis, as play rather than work, but if you are not willing to give the best mental effort you are able to put forth you will never rise above the level of the amateur.

- Assignments:* 1. How much theory or science is needed to appreciate the fine arts? To produce them?
2. What specific uses of or benefits from your knowledge of science have you derived in your artistic activity?
  3. What school sciences contribute most to the fine arts?
  4. How can you cause your scientific knowledge to function more extensively in your artistic activities?

**7. How to study the history of an art.** Much of what was said in the chapter on literature applies in the present connection, because literature is one of the fine arts.

At the risk of some repetition, however, we shall point out a few guiding principles that should be considered in studying the historical aspects of the arts.

*Study art history from the biographical approach.* Organize your study of the historical background by devoting it to the study of artists, rather than of art. The hero-worship tendency has big possibilities in it for the appreciation of the hero's work. When you come to think of an artist as a flesh-and-blood person who has joys and sorrows like your own, you may get a new meaning and a new enjoyment from his works. The historical background of an art is also more interesting when studied in connection with men than when studied in a more abstract way.

*Start with some artistic creation and look up its historical background.* A worth-while variation from the biographical approach is that in which you trace the origin and development of some present-day musical or artistic topic. If you are looking at a picture of the *Blue Boy* and wonder who painted it and what it is all about, stop and go into the history of that painting. All the history you study in this fashion has a direct application and a direct service. This method of approach is very much in contrast with that in which you start at the beginning and study about all the artists and all their works in a systematic way, regardless of the existence of questions, problems, or genuine desire for further knowledge.

*Do not substitute historical study for actual contact with the masterpieces themselves.* If you have a limited time for the study of great works of art, it is more important to study the works themselves than to study about their origin and development, or the lives of their creators.

*Associate historical information with productions themselves.* One of the greatest difficulties in the study of the

history of art lies in the failure to connect historical information with artistic experiences. If the two are learned separately they are likely never to mix. It is possible to learn about the life of Beethoven in one system of experience and to listen to his *Moonlight Sonata* in another, and thus fail to make any connections between the two systems of experience. The history of an art is almost worthless unless you connect it with actual experiences in that art.

*Assignments:* 1. Tell in class an instance in which your appreciation of an artistic creation was increased through your historical knowledge.

2. What types of historical knowledge do you think add to appreciation of a painting or piece of music?
3. What faulty or questionable procedures in the study of history of art have you observed?
4. Name a good book on the history of music or art which you can really recommend as having high value.

**8. How to be a valuable member of an organization devoted to one of the arts.** Organizations and clubs are characteristic of the fine arts, and for that reason a few points on the technique of being a good club member may be in order.

*Be prompt and regular in attendance.* As a general rule these organizations are such that tardiness of one person may hold up effective work for the entire group. If you cannot be on time and attend regularly there is a grave doubt as to whether you ought to be a member at all.

*Try to be a pleasing personality as well as a good artist.* The human or social qualities required of a member are just as important as the artistic qualities. If you have the proverbial "artistic temperament" and cannot get along with anyone, you will not be of much service to the organization.

*Cooperate.* Team work is fully as essential in an orches-

tra, dramatic club, or art society as it is in an athletic team. You have to learn to carry your share of responsibility and not complain if you are assigned a less distinguished part than you wished. Even if someone else is given the leading place you should blend your talent with that of the others to produce an artistic whole.

*Help keep up the morale of the organization.* You owe it to the group not only to be a good member yourself but to keep everyone else interested, enthusiastic, cheerful, and happy. Refraining from grumbling, complaining, and annoying the director is a first step. You should go further, however, and try to help the other members to curb their complaints and expressions of dissatisfaction. Thus you can be a positive force instead of a negative or neutral one.

*Lend your services in accessory capacities.* In any organization there are usually many forms of work besides the main business of the group. For instance, in a dramatic society there is need for someone to make costumes and stage scenery. In an art society there is need for someone to make contacts with citizens of the community and enlist their cooperation. If you are not willing to help in such accessory capacities you are not an ideal member.

*Work hard so that you do not hold the group back in its progress.* If you belong to an organization and are so lazy you are the last to learn your part you need to reform or else drop your membership. Much of hard work, study, and practice is required to maintain eligibility in a good club or organization.

*Do not discredit your group by poor scholarship in your regular studies.* You may be a very good member of the group in the ordinary sense, in that you are cooperative, diligent, and interested in the group's projects. But if

you become so interested in these projects that you neglect your other school subjects your poor record will reflect on the organization to which you belong. The good group member is the one who is a credit to the organization both inside and outside the club room.

*Assignments:* 1. What difficulties which often face artistic organizations and societies could be remedied by the members?

2. What kinds of artistic organizations do you recommend for your school?

3. Draw up a set of rules for members of a band, a glee club, a dramatic club.

4. What can one member do to awaken enthusiasm in a struggling organization?

**9. How to be a good critic of the arts.** The problem of knowing what is good and what is poor art is of no small importance, and one which you face almost every day. The purpose of this section is not to teach you how to be a professional art critic but rather how to select for your own enjoyment the creations which really have the highest merit.

*Inform yourself about the principles of the art.* The first requirement of good judgment is that you know the qualities that make up good art or the principles underlying the work of the artist.

*Be sincere and independent in your judgments.* Make your own true and honest estimate of a work instead of borrowing judgments from others. Do not let the prejudices of others, either for or against a piece, have undue influence when making up your mind. There is much elaborate advertising to foster particular artistic creations and to make them popular favorites for the sake of financial gain. Unless you have a reasonably adequate standard of your own you are at the mercy of the scientific advertisers.

*Get enough specimens that you have an adequate standard*

*for comparison.* It may be difficult to judge what is good and what is bad when you have only two or three items to compare. But when you get thirty or forty items the differences will show up more noticeably. If you surround yourself with beautiful pictures, visit the art galleries, attend good musical concerts, listen to high-grade radio programs, and witness the best the stage has to offer, you build up a fund of artistic experiences and have something with which to compare a particular creation when you judge it.

*Classify the works according to their types or characteristics.* As a first step in judging a creation it is well to place it in one of three or four main divisions of the field as a whole. Thus you may classify a painting first as to whether it is realistic or idealistic, or as to the type of audience for which it is intended. In other words, if you first make a general judgment of this sort, you narrow down your field of comparison so that you are in a better position to judge more minutely within its special category.

*Compare a given piece with others whose values are already standardized.* Very few persons can tune an instrument from a sense of absolute pitch, but large numbers can tune it if they have a tuning fork or some other known standard with which to make a comparison. The same is true in evaluating a work of art. You are more likely to strike your true evaluation if you compare a given piece with some well-known standard piece. This is the same principle as is employed in judging handwriting, English composition, or children's drawings. A handwriting scale consists of a series of samples of handwriting that are of known degrees of merit; it is easy to compare a given specimen with these standard specimens and find the nearest equivalent.



*Judge a piece from several angles separately rather than in the lump.* The score-card idea is as useful in judging works of art as in judging fine poultry, agricultural products, or school buildings. Make a list of the qualities or phases upon which you expect to base your judgment and rate the piece on each of these separately. When you are through put your ratings together into a composite. By this method you are more likely to give everything its due consideration and much less likely to have your entire judgment prejudiced by some minor phase or element.

*Verify your judgments by comparison with those of expert critics.* While you are just formulating your standards there is much to be gained by making your own independent judgment before reading what others have said about a work, and later comparing your estimate with those of the recognized critics. For example, attend a play or go to a concert and make up your mind about the performers, then consult the published reviews to check on the accuracy and soundness of your judgments. You may not agree with the critics, but you nevertheless learn from them.

- Assignments:* 1. How does artistic judgment affect appreciation?  
2. In what ways may the criticism of artistic products be overdone?  
3. Make a list of the points by which you would judge a picture or a concert number.  
4. Report your estimate of some picture which the class has seen or some musical number which it has recently heard and compare with the estimates of your classmates.

**10. How to appreciate the fine arts.** Knowing what is good art does not guarantee your enjoying it. The appreciation of art is similar to the liking of certain foods in that it can be cultivated. There are numerous ways in which you can enjoy an artistic creation, and different persons will enjoy it differently. In the para-

graphs that follow, a number of these ways will be described.

*Relax and let the artist do with you as he will.* Art appreciation is like hypnotism in that the desired mental state may be achieved much more easily if you put yourself in harmony with the artist or the hypnotist. We might illustrate the point in terms of dancing. If both partners were to take the initiative and each try to lead, there would be discord and confusion and the enjoyment of the dance would be spoiled. Consequently, it is customary for one partner to lead and the other to relax and accept unconscious suggestions from the other as to what movements to make next. This same state of mind is desirable in listening to a piece of music, in looking at a beautiful painting, or in enjoying any other type of art. The artist is the leader and should be given freedom to influence you according to his plan while you relax and put yourself under his complete control. One of the best ways to enjoy art is to divest yourself of any serious purposes and be perfectly plastic and pliable in the hands of the master.

*Day dream, with the artistic beauty as a subconscious background.* Enjoyment of beauty is very much like happiness in that it is much more real when you are not thinking about it than when you are. The happiest person is the one who is so absorbed in what he is doing that he has no time to think about how happy he is. Similarly, the person who most enjoys a painting or a piece of music may not be conscious of the fact that he is having an appreciative experience. Attend a concert and settle down, relax, day dream, meditate, or develop a mood to suit the music. Your thoughts may wander far away from the music, so that you are only half conscious that

a program is going on, but you may have a wonderful hour just the same.

*Imagine a story to suit the piece.* A very common and helpful method of enjoying a work of art is to construct some kind of imaginative background to explain what you see or hear. Your story may not resemble in the slightest degree the one which the artist had in mind, but if it gives you a meaning or an enjoyment which you did not previously have it has added to your appreciation. A profitable way to listen to music or study a picture in class is for each member to make up his story and then exchange orally. In that way each student helps the others to an enriched interpretation of the creation.

*Find out beforehand what to look for.* If you know the story of the musical selection before you listen to it you can direct your attention to the essential points and thus get more out of it. In attending the opera this is particularly important. If you know the story of the opera before you go you catch the significance of the different events as they occur, and can harmonize the music with the action.

*Increase your enjoyment by repetition.* You may not care for a musical selection the first time you hear it, but after a number of times you come to know what to expect and your satisfaction increases. This explains why some of the world's great musical creations have been favorites for years and even centuries. Their very familiarity is one of their greatest assets. The same principle applies to pictures. Many of the great pictures become more enjoyable as you live with them and see them day after day.

*Enjoy the by-products if you do not enjoy the major themes.* If you are not interested in the main circus you

may at least be amused by the side shows. If you do not care for the opera for its own sake go with a party for the sake of sociability, for the variation from the regular routine of daily living, for the chance to see the colorful costumes, for a chance to notice how well the opera follows the original story as you have known it from your contact with literature, or for any other reasons that appeals to you. It is entirely possible that by association with fine arts for the sake of their by-products you may later come to like them for their own sake.

*Appreciate art intellectually if you are so stimulated.* Many persons get considerable enjoyment out of artistic productions by indulging in one form or another of thought, problem-solving, or intellectual effort. One person may be interested in the composition of the music; another in the performance of the artist who is rendering it; a third in picking out the sounds of the different instruments, or in classifying the different selections according to the types of rhythm which they employ. Someone else may ponder over the question whether the artistic creation is true to life, or whether it interprets human nature according to true standards. All these forms of appreciation may be classed as intellectual, and may be foreign to the tastes of many patrons of the arts; but if they appeal to you there is no reason why you should not indulge in them.

*Translate rhythm into some sort of bodily behavior.* In enjoying the rhythmic phase of a piece of music the basic principle is that of muscular behavior. The almost universal practices of tapping, moving the feet, and resorting to dance movements are simply illustrations of this most fundamental principle. When rhythm becomes more complex and less obvious it may be more difficult to express in the form of movements, but this very diffi-

culty suggests that it may be more necessary to do so. As you become highly trained in the art of listening you may be able to catch the rhythm and follow it effectively without making any obvious or outward bodily movement, but in reality you have learned to repress the outward manifestations while you make them inwardly.

*Imagine yourself as the producer of the art.* A common practice on the part of artistic performers is to put themselves in the position of the artist whose works they are appreciating and to try to experience his reactions. Thus a violinist sitting in the audience during a violin solo may rehearse the solo himself in a suppressed fashion. Similarly, when you listen to a singer you tighten and loosen your own vocal cords and make contractions of other vocal muscles as the soloist goes up and down the range of notes. One of your keenest sources of satisfaction comes from making your own inner bodily adjustment, then finding that the artist agrees with you. It is not necessary for you to be an artistic producer in order to enjoy art, but if you are a producer you have an added avenue to enjoyment.

- Assignments:*
1. Tell the class what kind of experience or behavior goes on in you when you enjoy a concert.
  2. How does your behavior when listening to music differ from that when you see a beautiful picture?
  3. Rank the various methods of appreciation of the arts in the order of their merit.
  4. Cite specific instances when you failed to appreciate an artistic product which others enjoyed, and explain the reason.

**11. How to raise your standards of artistic taste.** It is possible for you figuratively to raise yourself by your own boot straps as regards your cultivation of higher standards of artistic taste. The paragraphs which follow suggest some ways of doing this.

*Expose yourself abundantly to artistic experiences.* You do not raise your artistic standards except through actual contacts with works of art. The contacts which you make and upon which you rely for improvement of your taste may be in connection with artistic creations of both low and high quality, but it is essential that the higher quality be included. You can never learn to like good art unless you come in contact with it. It is sometimes advantageous, however, to expose yourself to inferior productions in order that by sheer force of contrast you may realize more keenly their shortcomings and their lack of satisfying qualities. Art experts are not entirely agreed upon this point but they are agreed that you must expose yourself to the good art or you will never learn to like it.

*Get a foothold through appreciation of the by-products and gradually transfer to the enjoyment of the art itself.* There is a great deal of sound psychology in the "entering wedge" method of gaining artistic appreciation. If you can find something in a piece to enjoy, however meager and irrelevant it may be, make the most of this entering wedge and soon you will be well entrenched on the higher level of artistic appreciation.

*Rely on the contagion of enthusiasm of those who have reached high levels of appreciation.* Attend concerts with music lovers. Go through the art galleries with friends who understand and love beautiful pictures. Join an organization made up of persons who are interested in things beautiful. The psychology of the herd will do the rest.

*Work up to higher levels by degrees.* Do not hope to make drastic changes in your level of art appreciation all at once. There is a long distance between the daily comic strips and the paintings of the great masters.



There is a wide gap between the popular jazz song and the symphony. If you start where you are and gradually improve your selections you will find after a period that you have made considerable improvement.

*Endure for a while and thus learn to enjoy.* Patience is a virtue when you are trying to learn to like something that is a bit beyond your reach. A piece may not offer any satisfaction the first time you come in contact with it, but if you try again and again the mere force of repetition may enable you to win. If you attend concerts, plays and exhibits which are manifestly beyond your appreciation level you may eventually make an adjustment and get real satisfaction from them.

*Assignments:* 1. What are the principal factors or forces at work in the world today that are raising standards of artistic taste?

2. What specific factors or forces can you credit with having improved your own artistic taste?

3. What evidence do you have that you have really made improvement in your own artistic tastes during the last few years?

4. What types of art do you aspire to appreciate which you do not at the present time enjoy?

**12. How to achieve beauty of person, home, and environment.** A valuable outcome of the study of the arts should be the beautification of the environment in which you live. The pursuit of beauty should not be for recreation or pastime solely; it should have numbers of practical applications as well. For convenience we may speak of this point under the term "applied art"; our problem then becomes "how to be successful in the field of applied art."

*Increase beauty by decreasing ugliness.* It is possible to beautify yourself or your environment in either a positive or a negative way. Speaking in negative terms, the first essential is to eliminate the elements which mar the picture. For example, if the spread on your bed is

wrinkled, if the objects on your dresser are arranged in a scrambled fashion, or if the floor is untidy, these negative factors may completely counteract the influence of tasty furniture, attractive design, and harmonious interior decoration. Similarly, you may wear the finest of clothes, most appropriately selected, and yet spoil the entire picture by having a dirty face, ill-kept hair, or unpolished shoes. The first step toward beauty, therefore, is to get rid of ugliness.

*Deliberately practice the art of decoration.* The natural sequel to the above point is that of putting emphasis upon actual beautification. It is well to give attention to such things as arranging flowers in a vase, hanging flags, drapes, or curtains in your room, placing the pictures attractively on the wall, balancing the furniture so as to fill the room comfortably, choosing articles of clothing or jewelry to harmonize with each other and with your physical features, or planting flowers in the yard or around the house so that they will make the best impression.

*Study a particular situation which you like or dislike and discover what impresses you.* Often you have a vague impression that something is wrong about a person, a room, or a garden, but cannot say immediately what it is. Likewise, you see a person who impresses you as being very attractively dressed and neat in his appearance but cannot say at once what is responsible for your decision. It is necessary to analyze these impressions in more detail before they become serviceable as personal guides. When you break the whole up into its many parts, subdivisions, or aspects, you get it down to fine enough units that you can make applications to your own problems. We speak of this as a case of good observation, and we know that some persons are much more skillful

in borrowing good ideas from their friends and associates than are others. The difference in this ability to borrow is not so much one in native talent as in methods of observing.

*Subscribe to journals which specialize in the applied arts.* If you are genuinely concerned about improving the environment in which you live there is no lack of sources for good ideas. This problem is of such universal interest that large numbers of magazines are devoted to satisfaction of the need. In the matter of clothing, particularly for women, the number of journals is very large and their composite offering is complete and substantial. In the matter of home beautification we have such magazines as *House and Garden*, *House Beautiful*, and others. Similarly, there are journals which specialize in landscape gardening, city planning, and architecture. There is also a large number of publications on highly specialized types of applied art.

*In making purchases, go where there is a large variety of articles from which to choose.* To a considerable extent the problem of beautification of self and environment consists of selecting wisely and adapting your purchases to your particular situation. Go to the large department stores, or to the special stores in which you have a wide variety of articles from which to choose. It is possible to get many good artistic ideas by spending a day in the right department of a big store. A common practice on the part of women who make their own clothing is to go on an extensive window-shopping tour to get ideas, and then go home and make dresses embodying elements which they observed in the windows.

*Employ expert assistants for special purposes.* Art is very much like health in that there is a great deal that each individual should know for his daily needs and yet a

great deal more which is so highly specialized and technical that the average citizen cannot hope to know it. The latter must therefore be left to the expert or specialist. In the division of labor which is characteristic of modern society there are numbers of specialized artistic occupations. The fashion designer, the interior decorator, the beauty parlor operator, the landscape gardener, the architect, and the city planning expert are only a few illustrations. A good rule is to educate yourself as much as possible in the field of art so that you can meet the common responsibilities and solve the common problems of applied art, then to call in the trained expert to solve the problems and execute the tasks that call for more than ordinary artistic training.

- Assignments:* 1. Compare the value of pure and applied arts.
2. How many definite concrete benefits can you mention which result from a beautiful environment?
  3. Cite cases in which beauty could have been obtained at no greater cost than ugliness.
  4. What can you do to beautify your own classroom and school environment?

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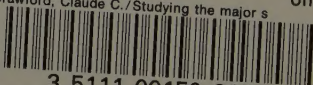
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